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PB-260 300

REPORT ON WATER POLLUTION
SOUTHEAST DRAINAGE BASINS
APPENDIX, PART III

PUBLIC HEALTH SERVICE, WASHINGTON, D.C.

1950

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PB 260 300

REPORT ON WATER POLLUTION
SOUTHEAST DRAINAGE BASINS

1950

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
WATER POLLUTION CONTROL DIVISION

IN FOUR PARTS - PART 3

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Div. of Water Supply and Pollution Control

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16. Abstracts

The current status of the National Water Pollution Control Program for the Southeast Drainage Basins is reported. The study provides an overview of water pollution control for the area, giving available data on water use, conditions of the waters, adequacy of existing treatment facilities, and the need for improved, enlarged, or new treatment works. The area includes part or all of Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Tennessee, and West Virginia.

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ERRATA

Part 3

Page	
273	Population served by the 32 undetermined municiple requirements should read 189,700
329	Project Requirement for Ocala should read "New Plant". Add statement at bottom of page "Treatment requirements of the 29 industrial establishments have not been determined."
363	Figure 2 under column Municipalities should read **2 and the footnote added "** One municipality also included in primary treatment."

REPORT ON WATER POLLUTION

Southeast Drainage Basins

1950

PRELIMINARY DRAFT OF PROPOSED REPORT

APPENDIX

Part 3

NOT FOR PUBLIC RELEASE

Prepared by:

Southeast Drainage Basins Office
Division of Water Pollution Control
Public Health Service, Federal Security Agency

on the basis of information supplied
by the following Agencies

Alabama Water Improvement Advisory Commission
Florida State Board of Health
Georgia Department of Public Health
Louisiana Stream Control Commission
Mississippi State Board of Health
North Carolina State Board of Health
South Carolina Water Pollution Control Authority
Tennessee Stream Pollution Control Board
Virginia Water Control Board

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	Municipal		Industrial	
Year	Plants Completed	Design Population	Plants Completed	Amount of Wastes Treated (In Terms of Equiv. No. People)
1946	0	-	0	-
1947	0	-	0	-
1948	0	-	0	-
1949	0	-	0	-

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Perdido-Escambia River Sub-basin

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Coosa River Sub-basin

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Cahaba River Sub-basin

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Upper Tombigbee River Sub-basin

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Each sub-basin report includes the following:

Table A - Sources of Pollution - Municipal

Table B - Sources of Pollution - Industrial

Table C - Existing Treatment Facilities - Municipal

Table D - Existing Treatment Facilities - Industrial

Table E - Adequacy of Existing Treatment Facilities

Table F - Progress in Pollution Abatement

Table G - Requirements for Municipal and Industrial Waste Treatment Plants

Table H - Status of Treatment Works Projects to Abate Pollution

Table I - Project List - Municipalities and Industries Requiring Improvements for Abatement of Pollution

SUB-BASIN 17

OGEECHEE RIVER BASIN

GENERAL DESCRIPTION

The Ogeechee River Basin is bounded on the northeast by the Savannah River Basin, on the east by the Atlantic Ocean, on the southwest by the Altamaha River Basin and on the west by the Oconee River Basin. The river rises in Greene County, Georgia, and flows in a southeastern direction to Ossabaw Sound. Although its headwaters are in the Piedmont Plateau, it flows for all but a short part of its length across the Coastal Plain, and thus carries a relatively light load of silt.

The drainage area of the basin, which is entirely within the State of Georgia, is about 5,355 square miles. It has one major tributary, the Canoochee which enters the main stream near its mouth.

The river is bordered on much of its length by swamp forests. The upland portions of the basin consist of pine forests and farm land.

The climate of the basin is mild. The mean annual temperature varies from sixty-four degrees in the northern part to sixty-seven degrees toward the coast. The average annual rainfall is about forty-six inches. The frost free growing season averages from 220 to 270 days depending on latitude.

A five year record of the river gauging station at Eden, Georgia, where the drainage area is 2,650 square miles, shows a twenty-four hour maximum discharge of 23,700 cubic feet per second, a minimum discharge of 258 cubic feet per second, and an average discharge of 1,678 cubic feet per second.

The population of the basin according to the census of 1940 was 153,946. The 1950 preliminary census indicates the population to have decreased to 143,141, or seven percent.

ECONOMIC DEVELOPMENT

There are two urban communities in the basin having a combined population of 9,532, or seven percent of the total population. While the urban population increased slightly during the period 1940-1950, the rural population has decreased by nine percent.

The principal natural resources of the basin are its soils and timber supply. The basin is mainly an agricultural area and the major products are corn, peanuts, cotton, tobacco, hogs and cattle, and naval stores.

Industry in the basin is not highly developed. It consists principally of the food and kindred products and chemical and allied products types.

USE OF WATER RESOURCES

There are fifteen public water supplies in the basin serving a population of 14,800. None of these supplies are from surface sources.

The Ogeechee River and its tributaries provides some of the best fresh water sport fishing in the State of Georgia; and in its lower reaches, a certain amount of commercial fishing. In addition, the swamps and forests of the area support a large population of game animals including deer, wild turkeys, and ducks which are hunted extensively in season. The basin offers distinct possibilities for the further development of its recreational potentialities.

POLLUTION AND POLLUTION CONTROL

The Georgia Water Pollution Control Agency has not made available to the Southeast Drainage Basins Office data regarding:

1. The amount of pollution, municipal or industrial discharged to the watercourse.
2. Sources of industrial pollution.
3. Existing industrial waste treatment facilities.
4. Adequacy of existing municipal sewage treatment facilities.
5. Requirements for municipal and/or industrial waste treatment plants.
6. Status of treatment works projects to abate pollution, or
7. A project list of treatment works required for the abatement of pollution.

The Georgia Water Pollution Control Agency prepared a report to the municipalities of Georgia, a copy was furnished the Southeast Drainage Basins Office. The report states, "It is designed to show the progress which has been made individually and collectively in conserving one of our greatest natural resources--the streams of the State". The report lists in tabular form:

1. Number of cities with and without sewage treatment.
2. Number of cities which constructed sewage works during the past 15 years.
3. The cities previously having no sewers which have constructed sewage works in past 15 years.
4. The cities for which Engineering Reports on sewage have been made.
5. The number of sewage treatment plants in Georgia by 5 year intervals.
6. A list of cities preparing to treat their sewage and
7. A listing of existing sewage treatment plants.

The information contained in Tables A through I, inclusive, is incomplete. The data concerning the industries of the State was obtained from "Manufacturers of Georgia" prepared by the Georgia Agricultural and Industrial Development Board, supplemented by the Georgia State Department of Commerce. The information concerning municipalities is from "Georgia Water Pollution Comprehensive Report" to municipalities of the State.

TABLE A

(17)

SOURCES OF POLLUTION

MUNICIPAL

Municipalities*	Sources of Pollution (In Number of Municipalities)	Population Served by Sewerage System	Amount of Pollution Discharged to Water-course (In Terms of Equivalent number of People)
Having data on pollution load discharged to watercourse	0	-	-
Having population data available (Data on pollution load to watercourse incomplete or not available)	11	9,750	Not applicable
TOTAL	11	9,750	XXXXXX

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE B (17)

SOURCES OF POLLUTION

INDUSTRIAL

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharged to Watercourse (In Terms of Equiv. No. of People)
Producing Organic Wastes	0	-
Producing Organic Wastes	0	Undetermined
Producing Inorganic Wastes	0	Not Applicable
Producing Wastes of Undetermined Type	*22	Undetermined
TOTAL	22	xxx xxx

* Industries (only those type normally considered to discharge wastes with polluting characteristics) located in the sub-basin, which may or may not have separate outlets. Information obtained from "Manufacturers of Georgia" prepared by the Georgia Agriculture and Industrial Development Board and supplemented by information from the Georgia State Department of Commerce.

TABLE C

(17)

EXISTING TREATMENT FACILITIES

MUNICIPAL

Degree of Treatment Provided	Number Municipalities*	Plants	Population Served
Primary	5	6	5,250
Secondary	2	2	1,700
No Treatment	4	XXX	2,800

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE D
(17)
EXISTING TREATMENT FACILITIES
INDUSTRIAL *

Type Industry	Number of Plants	Number of Industrial Plants Having: Treatment Facilities	No Treatment Facilities	Undetermined Facilities
Food and Kindred Products	11	0	0	11
Textile Mill Products	1	0	0	1
Chemical and Allied Products	10	0	0	10

* The industrial plants, listed by type, are from the "Manufacturers of Georgia" (prepared by the Georgia Agricultural and Industrial Development Board) selected as those industries within the sub-basin probably contributing to the pollution of the streams. They may or may not have separate waste outlets discharging directly to watercourse.

TABLE E
(17)
ADEQUACY OF EXISTING TREATMENT FACILITIES *

Existing Treatment Facilities	Number	Adequacy with Relation to: Capacity			Operation		
		Satisf.	Unsatisf.	Undetermined	Satisf.	Unsatisf.	Undetermined
Municipal	8	0	0	8	0	0	8
Industrial	0	-	-	-	-	-	-

* The Georgia Water Pollution Control Agency has made no report.

TABLE F
(18)
PROGRESS IN POLLUTION ABATEMENT

	Municipal		Industrial	
Year	Plants Completed	Design Population	Plants Completed	Amount of Wastes Treated (In Terms of Equiv.No.People)
1946	0	-	0	-
1947	0	-	0	-
1948	0	-	0	-
1949	0	-	0	-

TABLE G

(17)

REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL WASTE TREATMENT PLANTS *

Requirements	Municipal		Industrial
	Number	Population Served by Facilities	Number
New Plant	0	-	0
Enlargement or Additions to Existing Plant	0	-	0
Replace Existing Plant	0	-	0
No Project Required	0	-	0
Undetermined	**12	9,750	22

* The Georgia Water Pollution Control Agency has made no report.

** Includes one municipality with two primary plants.

TABLE H

(17)

STATUS OF TREATMENT WORKS PROJECT * TO ABATE POLLUTION

July 1,1950

Status of Project	Number Municipal	Industrial
No Formal Action	0	0
Abatement Ordered	0	0
Plans under Preparation	0	0
Final Plans Approved	0	0
Construction Awaiting Financing	0	0
Under Construction	0	0
Status Undetermined	**12	22

* The Georgia Water Pollution Control Agency has made no report.

** Includes one municipality with two primary plants.

TABLE I

PROJECT LIST - MUNICIPALITIES(17) AND INDUSTRIES REQUIRING IMPROVEMENTS FOR ABATEMENT OF POLLUTION *

July 1, 1950

---

* The Georgia Water Pollution Control Agency has made no report.

SUB-BASIN 18

OCONEE RIVER BASIN

GENERAL DESCRIPTION

The Oconee River Basin, a rather long and narrow basin, is bounded on the northeast by the Savannah, Ogeechee, and Altamaha River basins, on the southwest by the Ocmulgee River Basin, and on the northwest by the Chattahoochee River Basin.

The river rises at the base of the Chattahoochee Ridge near Gainesville, Georgia at about elevation 1,000, and flows in a southeasterly direction across the Piedmont Plateau (Central Upland) into the Coastal Plain to its confluence with the Ocmulgee River in south central Georgia. The basin lies entirely within the State of Georgia and comprises about 5,548 square miles. The river has a total length of 250 miles.

The average annual rainfall varies from forty-eight inches in the southern part of the basin to fifty inches in the northern part. The mean annual temperature varies from sixty-two to sixty-five degrees depending on latitude. The average number of days in the growing season is about 240.

The population of the basin based on the 1940 census was 248,821. The preliminary 1950 census indicates the population to be 250,666.

ECONOMIC DEVELOPMENT

There are eight urban communities in the basin, an increase of two since 1940. These communities constitute twenty-six percent of the total population, an increase of seven percent since 1940. The rural population during this period has decreased by nine percent, while the total population has remained nearly constant.

The economy of the basin is one primarily of agriculture. The farms of the region yield a variety of products including cotton, corn, tobacco, peanuts, vegetable, fruit and livestock.

Industries are related primarily to the processing of agricultural and forest products. Most important of these are processers of food and kindred products, chemicals and allied products, textiles and paper, lumber, and the manufacture of brick and tile. Kaolin and clay are mined. Athens in the north and Dublin in the south are the principal commercial centers of the basin.

USE OF WATER RESOURCES

There are twenty-seven public water supplies in the basin serving a population of 66,765. Twelve of these are surface supplies serving 54,635 people.

There are three principal privately owned run-of-the river water power developments in the basin, the largest of which has a rated capacity of 2,800 kilowatts. Smaller developments, ranging down to grist mill power, are scattered over the basin. The reservoirs supply a certain amount of sport fishing, but the main stem of the river is too muddy to be a good fishing stream.

The river is navigable to Milledgeville by means of a three foot channel.

POLLUTION AND POLLUTION CONTROL

The Georgia Water Pollution Control Agency has not made available to the Southeast Drainage Basins Office data regarding:

1. The amount of pollution, municipal or industrial discharged to the watercourse.
2. Sources of industrial pollution.
3. Existing industrial waste treatment facilities.
4. Adequacy of existing municipal sewage treatment facilities.
5. Requirements for municipal and/or industrial waste treatment plants.
6. Status of treatment works projects to abate pollution, or
7. A project list of treatment works required for the abatement of pollution.

The Georgia Water Pollution Control Agency prepared a report to the municipalities of Georgia, a copy was furnished the Southeast Drainage Basins Office. The report states, "It is designed to show the progress which has been made individually and collectively in conserving one of our greatest natural resources--the stream of the State". The report lists in tabular form:

1. Number of cities with and without sewage treatment.

2. Number of cities which constructed sewage works during the past 15 years.

3. The cities previously having no sewers which have constructed sewage works in past 15 years.

4. The cities for which Engineering Reports on sewage have been made.

5. The number of sewage treatment plants in Georgia by 5-year intervals.

6. A list of cities preparing to treat their sewage, and

7. A listing of existing sewage treatment plants.

The information contained in Tables A through I, inclusive, is incomplete. The data concerning the industries of the State was obtained from "Manufacturers of Georgia" prepared by the Georgia Agricultural and Industrial Development Board, supplemented by the Georgia State Department of Commerce. The information concerning municipalities is from "Georgia Water Pollution Comprehensive Report" to municipalities of the State.

TABLE A

(18)

SOURCES OF POLLUTION

MUNICIPAL

Municipalities*	Sources of Pollution (In Number of Municipalities)	Population Served by Sewerage System	Amount of Pollution Discharged to Watercourse (In Terms of Equivalent number of People)
Having data on pollution load discharged to watercourse	0	-	-
Having population data available (Data on pollution load to watercourse incomplete or not available)	16	41,090	Not applicable
TOTAL	16	41,090	XXXXXX

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE B
(18)

SOURCES OF POLLUTION

INDUSTRIAL

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharged to Watercourse (In Terms of Equiv. No. of People)
Producing Organic Wastes	0	
Producing Organic Wastes	0	Undetermined
Producing Inorganic Wastes	0	Not Applicable
Producing Wastes of Undetermined Type	*60	Undetermined
TOTAL	60	xxx xxx

* Industries (only those type normally considered to discharge wastes with polluting characteristics) located in the sub-basin, which may or may not have separate outlets. Information obtained from "Manufacturers of Georgia" prepared by the Georgia Agriculture and Industrial Development Board and supplemented by information from the Georgia State Department of Commerce.

TABLE C

(18)
EXISTING TREATMENT FACILITIES

MUNICIPAL

Degree of Treatment Provided	Number Municipalities*	Plants	Population Served
Primary	6	7	5,640
Secondary	1	2	1,000
No Treatment	9	XXX	34,450

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE D

(18)

EXISTING TREATMENT FACILITIES

INDUSTRIAL *

		Number of Industrial Plants Having:		
Type Industry	Number of Plants	Treatment Facilities	No Treatment Facilities	Undetermined Facilities
Food and Kindred Products	26	0	0	26
Textile Mill Products	5	0	0	5
Paper and Allied Products	1	0	0	1
Chemical and Allied Products	26	0	0	26
Miscellaneous	2	0	0	2

* The industrial plants, listed by type, are from the "Manufacturers of Georgia" (prepared by the Georgia Agricultural and Industrial Development Board) selected as those industries within the sub-basin probably contributing to the pollution of the streams. They may or may not have separate waste outlets discharging directly to watercourse.

TABLE E
(18)
ADEQUACY OF EXISTING TREATMENT FACILITIES *

Existing Treatment Facilities	Number	Adequacy with Relation to: Capacity			Operation		
		Satisf.	Unsatisf.	Undetermined	Satisf.	Unsatisf.	Undetermined
Municipal	9	0	0	9	0	0	9
Industrial	0	-	-	-	-	-	-

* The Georgia Water Pollution Control Agency has made no report.

TABLE G

(18)

REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL

WASTE TREATMENT PLANTS *

Requirements	Municipal		Industrial
	Number	Population Served by Facilities	Number
New Plant	0	-	0
Enlargement or Additions to Existing Plant	0	-	0
Replace Existing Plant	0	-	0
No Project Required	0	-	0
Undetermined	**18	41,090	60

* The Georgia Water Pollution Control Agency has made no report.

** Includes one municipality with two primary plants and one municipality with two secondary treatment plants.

TABLE H

(18)

STATUS OF TREATMENT WORKS PROJECT TO ABATE POLLUTION *

July 1, 1950

Status of Project	Number Municipal	Industrial
No Formal Action	0	0
Abatement Ordered	0	0
Plans under Preparation	0	0
Final Plans Approved	0	0
Construction Awaiting Financing	0	0
Under Construction	0	0
Status Undetermined	**18	60

* The Georgia Water Pollution Control Agency has made no report.

** Includes one municipality with two primary plants and one municipality with two secondary treatment plants.

TABLE I

PROJECT LIST - MUNICIPALITIES AND INDUSTRIES REQUIRING IMPROVEMENTS FOR ABATEMENT OF POLLUTION *[18]

July 1, 1950

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* The Georgia Water Pollution Control Agency has made no report.

SUB-BASIN 19

OCMULGEE RIVER BASIN

GENERAL DESCRIPTION

The Ocmulgee River Basin is bounded on the northeast by the Oconee River Basin, on the southeast by the Altamaha and Satilla River Basins, on the southwest by the Suwanee and Flint River Basins, and on the northwest by the Chattahoochee River Basin.

The river rises at the base of the Chattahoochee Ridge in the Piedmont Plateau (central Upland) near Atlanta, Georgia at about elevation 1000, and flows in a general southeasterly direction for about 240 miles and then in a northeasterly direction to its confluence with the Oconee River in the Coastal Plain in south central Georgia. The basin lies entirely within the State of Georgia and comprises about 5,909 square miles. The river has a total length of 315 miles.

The average annual rainfall varies from forty-seven inches in the lower part of the basin to fifty inches in the northern part. The mean annual temperature varies from sixty-three to sixty-six degrees. The growing season averages 240 days.

The population of the basin based on the 1940 census was 459,039. The preliminary 1950 census indicates the population to be 535,863.

ECONOMIC DEVELOPMENT

There are thirteen urban municipalities entirely within the basin and parts of three others whose urban populations constitute forty-nine percent of the total. The largest of these is Atlanta, but this city is principally in the Chattahoochee River Basin. Macon, a city of 70,106, is the largest city entirely within the Oconulgee River Basin and is an industrial and railroad center and a trading center for a large agricultural area.

The basin is one of combined industry and agriculture. Industries are related primarily to the processing of agricultural and forest products and concern chiefly the manufacture of chemicals and allied products, food and kindred products, furniture, and textile mill products. Two paper and allied product mills are located in the basin, both at Macon. Kaolin and mica are mined and granite is quarried.

The farms of the basin yield a large variety of products including cotton, corn, tobacco, peanuts, vegetables, fruit and livestock.

USE OF WATER RESOURCES

There are thirty-eight public water supplies in the basin serving a population of 129,847. Nine of these are from surface sources and serve 104,685 people.

There are five privately owned water-power developments located on the river and its tributaries with a station rating of 500 kilowatts or larger. All are comparatively small run-of-the river plants, except the Loyd Shoals (Jackson Reservoir) plant which has a rated capacity of 18,000 kilowatts. Smaller developments, ranging down to small grist mill power, are scattered over the basin. The reservoirs provide a certain amount of sport fishing, boating and swimming.

The river is navigable to Macon by means of a three foot channel.

POLLUTION AND POLLUTION CONTROL

The Georgia Water Pollution Control Agency has not made available to the Southeast Drainage Basins Office data regarding:

1. The amount of pollution, municipal or industrial discharged to the watercourse.
2. Sources of industrial pollution.
3. Existing industrial waste treatment facilities.
4. Adequacy of existing municipal sewage treatment facilities.
5. Requirements for municipal and/or industrial waste treatment plants.
6. Status of treatment works projects to abate pollution, or
7. A project list of treatment works required for the abatement of pollution.

The Georgia Water Pollution Control Agency prepared a report to the municipalities of Georgia, a copy was furnished the Southeast Drainage Basins Office. The report states, "It is designed to show the progress which has been made individually and collectively in conserving one of our greatest natural resources--the streams of the State". The report lists in tabular form:

1. Number of cities with and without sewage treatment.
2. Number of cities which constructed sewage works during the past 15 years.
3. The cities previously having no sewers which have constructed sewage works in past 15 years.
4. The cities for which Engineering Reports on sewage have been made.
5. The number of sewage treatment plants in Georgia by 5 year intervals.
6. A list of cities preparing to treat their sewage and
7. A listing of existing sewage treatment plants.

The information contained in Tables A through I, inclusive, is incomplete. The data concerning the industries of the State was obtained from "Manufacturers of Georgia" prepared by the Georgia Agricultural and Industrial Development Board, supplemented by the Georgia State Department of Commerce. The information concerning municipalities is from "Georgia Water Pollution Comprehensive Report" to municipalities of the State.

TABLE A (19)

SOURCES OF POLLUTION

MUNICIPAL

Municipalities*	Sources of Pollution (In Number of Municipalities	Population Served by Sewerage System	Amount of Pollution Discharged to Watercourse (In Terms of Equivalent number of People)
Having data on pollution load discharged to watercourse	0	-	-
Having population data available (Data on pollution load to watercourse incomplete or not available	27	189,700	Not applicable
TOTAL	** 29	189,700	XXX XXX

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

** Includes two college sewerage systems with no pollution served figures available.

TABLE B (19

SOURCES OF POLLUTION

INDUSTRIAL

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharged to Watercourse (In Terms of Equiv. No. of People)
Producing Organic Wastes	0	-
Producing Organic Wastes	0	Undetermined
Producing Inorganic Wastes	0	Not Applicable
Producing Wastes of Undetermined Type	*74	Undetermined
TOTAL	74	xxx xxx

* Industries (only those type normally considered to discharge wastes with polluting characteristics) located in the sub-basin, which may or may not have separate outlets. Information obtained from "Manufacturers of Georgia" prepared by the Georgia Agriculture and Industrial Development Board and supplemented by information from the Georgia State Department of Commerce.

TABLE C (19)

EXISTING TREATMENT FACILITIES

MUNICIPAL

Degree of Treatment Provided	Number		Population Served
	Municipalities*	Plants	
Primary	9	9	7,900
Secondary	7	9	88,900
No Treatment	**14	XXXX	92,900

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

** Includes one municipality also listed under primary treatment.

TABLE D(19)

EXISTING TREATMENT FACILITIES

INDUSTRIAL *

Type Industry	Number of Plants	Number of Industrial Plants Having: Treatment Facilities	No Treatment Facilities	Undetermined Facilities
Food & Kindred Products	24	0	0	24
Textile Mill Products	12	0	0	12
Lumber & Wood Products	1	0	0	1
Paper & Allied Products	2	0	0	2
Chemical & Allied Products	30	0	0	30
Products of Petroleum & Coal	2	0	0	2
Leather & Leather Products	2	0	0	2
Miscellaneous	1	0	0	1

* The industrial plants, listed by type, are from the "Manufacturers of Georgia" (prepared by the Georgia Agricultural and Industrial Development Board) selected as those industries within the sub-basin probably contributing to the pollution of the streams. They may or may not have separate waste outlets discharging directly to watercourse.

TABLE E (19)

ADEQUACY OF EXISTING TREATMENT FACILITIES*

Existing Treatment Facilities	Number	Adequacy with Relation to:					
		Capacity			Operation		
		Satisf.	Unsatisf.	Undetermined	Satisf.	Unsatisf.	Undetermined
Municipal	18	0	0	18	0	0	18
Industrial	0	-	-	-	-	-	-

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[*] The Georgia Water Pollution Control Agency has made no report.

TABLE F (19)

PROGRESS IN POLLUTION ABATEMENT

	Municipal		Industrial	
Year	Plants Completed	Design Population	Plants Completed	Amount of Wastes Treated (In Terms of Equiv.No.People)
1946	0	-	0	-
1947	0	-	0	-
1948	1	3,000	0	-
1949	0	-	0	-

TABLE G (19)

REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL WASTE TREATMENT PLANTS *

Requirements	Municipal		Industrial
	Number	Population Served by Facilities	Number
New Plant	0	-	0
Enlargement or Additions to Existing Plant	0	-	0
Replace Existing Plant	0	-	0
No Project Required	0	-	0
Undetermined	** 32	-	74

* The Georgia Water Pollution Control Agency has made no report.

** Include two municipalities with multiple outlets.

TABLE H$_{(19)}$

STATUS OF TREATMENT WORKS PROJECT TO ABATE POLLUTION *

July 1, 1950

Status of Project	Number	
	Municipal	Industrial
No Formal Action	0	0
Abatement Ordered	0	0
Plans under Preparation	0	0
Final Plans Approved	0	0
Construction Awaiting Financing	0	0
Under Construction	0	0
Status Undetermined	** 32	74

* The Georgia Water Pollution Control Agency has made no report.

** Includes two municipalities with multiple outlets.

TABLE I
(19)

PROJECT LIST - MUNICIPALITIES AND INDUSTRIES REQUIRING IMPROVEMENTS FOR ABATEMENT OF POLLUTION *

July 1, 1950

* The Georgia Water Pollution Control Agency has made no report.

SUB-BASIN 20

ALTAMAHA RIVER BASIN

GENERAL DESCRIPTION

The Altamaha River Basin is bounded on the north and northeast by the Ogeechee River Basin, on the east by the Atlantic Ocean, on the south by the Satilla River Basin, and on the west by the Ocmulgee and Oconee River Basins.

The Altamaha River is formed in south central Georgia by the confluence of the Ocmulgee and Oconee Rivers. From this point, which is known as The Forks, it flows easterly for 30 miles and then south of east for 107 miles to its delta outlets into Doboy Sound and Altamaha Sound. The area of the basin, which lies entirely within the State of Georgia, comprises about 2,691 square miles.

The basin lies entirely within the Coastal Plain and meanders through a comparatively broad and shallow valley. The river is tidal for about 33 miles above its mouth. The average low water slope of the river in the non-tidal section is 0.67 feet per mile. The flood plain varies in width from 1 mile to 4½ miles.

The average annual rainfall varies from about forty-seven inches at The Forks to nearly fifty inches near the coast. The low water discharge at Doctortown, 59.4 miles above the mouth, is reported to be about 2,000 second feet.

The mean annual temperature varies from about sixty-five degrees in the northern part of the basin to sixty-nine degrees near the coast. The average frost free season varies from 250 to 280 days. Precipitation is fairly uniform. Floods occur occasionally and hurricanes pass over the area at times.

The population of the basin was 83,371 based on the 1940 census. The preliminary 1950 census indicates that the population has decreased by four percent to 79,667.

ECONOMIC DEVELOPMENT

There are four urban communities in the basin whose combined populations constitute twenty-two percent of the total. The largest of these is Vidalia which has a population of 5,827. The rural population has decreased by fifteen percent since 1940.

The principal resources of the basin are its agricultural lands, an abundant timber supply from the swamps lying along the river, and naval stores. Agricultural products include cotton, corn, tobacco, and livestock.

USE OF WATER RESOURCES

There are sixteen public water supplies in the basin serving 19,100 people. None are from surface sources.

No hydroelectric developments exist on the river and none seem likely due to the native of the topography.

Transportation on the river is slight, being limited at present to the hauling of logs.

The primary utilization of the water resources of the basin are for recreation and by fish and wildlife. The river provides some of the finest sport fishing in the State and in addition supports a small amount of commercial fishing. The extensive forested swamps bordering much of the stream make this area a haven for ducks, wild turkeys, deer and other wildlife and provides for good hunting. No public recreational areas have been developed in the area.

POLLUTION AND POLLUTION CONTROL

The Georgia Water Pollution Control Agency has not made available to the Southeast Drainage Basins Office data regarding:

1. The amount of pollution, municipal or industrial discharged to the watercourse.
2. Sources of industrial pollution.
3. Existing industrial waste treatment facilities.
4. Adequacy of existing municipal sewage treatment facilities.
5. Requirements for municipal and/or industrial waste treatment plants.
6. Status of treatment works projects to abate pollution, or

7. A project list of treatment works required for the abatement of pollution.

The Georgia Water Pollution Control Agency prepared a report to the municipalities of Georgia, a copy was furnished the Southeast Drainage Basins Office. The report states, "It is designed to show the progress which has been made individually and collectively in conserving one of our greatest natural resources--the streams of the State". The report lists in tabular form:

1. Number of cities with and without sewage treatment.
2. Number of cities which constructed sewage works during the past 15 years.
3. The cities cprviously having no sewers which have constructed sewage works in past 15 years.
4. The cities for which Engineering Reports on sewage have been made.
5. The number of sewage treatment plants in Georgia by 5 year intervals.
6. A list of cities preparing to treat their sewage and
7. A listing of existing sewage treatment plants.

The information contained in Tables A through I, inclusive, is incomplete. The data concerning the industries of the State was obtained from "Manufacturers of Georgia" prepared by the Georgia Agricultural and Industrial Development Board, supplemented by the Georgia State Department of

Commerce. The information concerning municipalities is from "Georgia Water Pollution Comprehensive Report" to municipalities of the State.

TABLE A(20)

SOURCES OF POLLUTION

MUNICIPAL

Municipalities*	Sources of Pollution (In Number of Municipalities)	Population Served by Sewerage System	Amount of Pollution Discharged to Watercourse (In Terms of Equivalent number of People)
Having data on pollution load discharged to watercourse	0	-	-
Having population data available (Data on pollution load to watercourse incomplete or not available)	9	11,860	Not Applicable
TOTAL	9	11,860	XXX XXX

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE B(20)

SOURCES OF POLLUTION

INDUSTRIAL

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharged to Watercourse (In Terms of Equiv. No. of People)
Producing Organic Wastes	0	-
Producing Organic Wastes	0	Undetermined
Producing Inorganic Wastes	0	Not Applicable
Producing Wastes of Undetermined Type	* 21	Undetermined
TOTAL	21	xxx xxx

* Industries (only those type normally considered to discharge wastes with polluting characteristics) located in the sub-basin, which may or may not have separat outlets. Information obtained from "Manufacturers of Georgia" prepared by the Georgia Agriculture and Industrial Development Board and supplemented by information from the Georgia State Department of Commerce.

TABLE C (20)

EXISTING TREATMENT FACILITIES

MUNICIPAL

Degree of Treatment Provided	Number Municipalities*	Plants	Population Served
Primary	9	13	11,860
Secondary	0	-	-
No Treatment	0	XXXX	-

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE D$_{(20)}$

EXISTING TREATMENT FACILITIES

INDUSTRIAL *

Type Industry	Number of Plants	Number of Industrial Plants Having: Treatment Facilities	No Treatment Facilities	Undetermined Facilities
Food & Kindred Products	9	0	0	9
Chemical and Allied Products	12	0	0	12

* The industrial plants, listed by type, are from the "Manufacturers of Georgia" (prepared by the Georgia Agricultural and Industrial Development Board) selected as those industries within the sub-basin probably contributing to the pollution of the streams. They may or may not have separate waste outlets discharging directly to watercourse.

TABLE $E_{(20)}$

ADEQUACY OF EXISTING TREATMENT FACILITIES *

Existing Treatment Facilities	Number	Adequacy with Relation to:					
		Capacity			Operation		
		Satisf.	Unsatisf.	Undetermined	Satisf.	Unsatisf.	Undetermined
Municipal	13	0	0	13	0	0	13
Industrial	0	-	-	-	-	-	-

* The Georgia Water Pollution Control Agency has made no report.

TABLE $F_{(20)}$

PROGRESS IN POLLUTION ABATEMENT

	Municipal		Industrial	
Year	Plants Completed	Design Population	Plants Completed	Amount of Wastes Treated (In Terms of Equiv.No.People)
1946	0	-	0	-
1947	0	-	0	-
1948	0	-	0	-
1949	0	-	0	-

TABLE G(20)

REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL WASTE TREATMENT PLANTS *

Requirements	Municipal		Industrial
	Number	Population Served by Facilities	Number
New Plant	0	-	0
Enlargement or Additions to Existing Plant	0	-	0
Replace Existing Plant	0	-	0
No Project Required	0	-	0
Undetermined	13	11,860	21

* The Georgia Water Pollution Control Agency has made no report.

TABLE H (20)

STATUS OF TREATMENT WORKS PROJECT TO ABATE POLLUTION *

July 1, 1950

Status of Project	Number	
	Municipal	Industrial
No Formal Action	0	0
Abatement Ordered	0	0
Plans under Preparation	0	0
Final Plans Approved	0	0
Construction Awaiting Financing	0	0
Under Construction	0	0
Status Undetermined	13	21

* The Georgia Water Pollution Control Agency has made no report.

TABLE I

(20)

PROJECT LIST - MUNICIPALITIES AND INDUSTRIES REQUIRING IMPROVEMENTS FOR ABATEMENT OF POLLUTION *

July 1, 1950

* The Georgia Water Pollution Control Agency has made no report.

SUB-BASIN 21

SATILLA RIVER BASIN

GENERAL DESCRIPTION

The Satilla River basin is bounded on the north by the Altamaha River Basin, on the east by the Atlantic Ocean, on the south by the St. Marys-Nassau River Basin, on the south and west by the Suwanee River basin, and on the northwest by the Ocmulgee River Basin. The river rises in south central Georgia and flows in a general easterly direction to St. Andrews Sound.

This river arises in the Coastal Plain and flows through a rather flat sandy area interspersed with swamps. It is consequently relatively clear. The basin, which lies entirely within the State of Georgia, comprises about 4,276 square miles. The upland portions consist of pine forests and farm land.

The climate of the basin is relatively hot and moist. The mean annual temperature varies from sixty-seven to sixty-nine degrees. The annual average rainfall varies from forty-eight inches inland to over fifty inches at the coast. The frost free growing season varies from 250 to 280 days. Much of the rainfall occurs in the long, warm, growing season, which encourages timber growth.

A ten year record of the river gauging station at

Atkinson, Georgia, where the drainage area is 2880 square miles, shows a twenty-four hour maximum discharge of 17,000 cubic feet per second, a twenty-four hour minimum discharge of 4.5 cubic feet per second, and a mean daily discharge of 1,534 cubic feet per second.

The population of the basin according to the census of 1940 was 124,607. The 1950 preliminary census indicates the population to be 134,409.

ECONOMIC DEVELOPMENT

There are five urban communities in the basin having a combined population of 50,398, or thirty-seven percent of the total population. The largest of these are Waycross, a farming and industrial center of 18,842 people, and Brunswick, a coastal industrial city of 18,086 population.

The economy of the basin is one of combined agriculture and industry. Principal agricultural products are tobacco, peanuts, corn, cattle and hogs, pecans, and products of the forest.

Industry centers around the processing of food, naval stores, and the manufacture of wood products and lumber. The Atlantic Coast Line Railroad shops are located at Waycross. Brunswick harbors a fishing fleet and processes sea foods. Ship yards and repair facilities, naval stores plants, and a paper pulp plant are also located there.

USE OF WATER RESOURCES

There are twelve public water supplies in the basin serving a population of 30,640. None of these are from surface sources.

The Satilla River system provides good fresh water sport fishing, and the numerous swamps and forest land support an abundant wild game population.

Excellent beaches exist at St. Simons Island and at Jekyll Island near Brunswick and extensive recreational facilities have been developed there. Salt water sport fishing, boating and swimming are popular activities.

The sounds along the coast support a commercial fishery of high value. Shrimp are probably the largest money catch, but crabs, food fishes, and oysters are also important.

The Intracoastal Waterway passes through the area, and shipping is of some importance at Brunswick.

POLLUTION AND POLLUTION CONTROL

The Georgia Water Pollution Control Agency has not made available to the Southeast Drainage Basins Office data regarding:

1. The amount of pollution, municipal or industrial discharged to the watercourse.
2. Sources of industrial pollution.
3. Existing industrial waste treatment facilities.
4. Adequacy of existing municipal sewage treatment facilities.

5. Requirements for municipal and/or industrial waste treatment plants.

6. Status of treatment works projects to abate pollution, or

7. A project list of treatment works required for the abatement of pollution.

The Georgia Water Pollution Control Agency prepared a report to the municipalities of Georgia, a copy was furnished the Southeast Drainage Basins Office. The report states, "It is designed to show the progress which has been made individually and collectively in conserving one of our greatest natural resources--the streams of the State". The report lists in tabular form:

1. Number of cities with and without sewage treatment.

2. Number of cities which constructed sewage works during the past 15 years.

3. The cities previously having no sewers which have constructed sewage works in past 15 years.

4. The cities for which Engineering Reports on sewage have been made.

5. The number of sewage treatment plants in Georgia by 5 year intervals.

6. A list of cities preparing to treat their sewage and

7. A listing of existing sewage treatment plants.

The information contained in Tables A through I, inclusive, is incomplete. The data concerning the industries of the State was obtained from "Manufacturers of Georgia" prepared by the Georgia Agricultural and Industrial Development Board, supplemented by the Georgia State Department of Commerce. The information concerning municipalities is from "Georgia Water Pollution Comprehensive Report" to municipalities of the State.

TABLE A (21)

SOURCES OF POLLUTION

MUNICIPAL

Municipalities*	Sources of Pollution (In Number of Municipalities)	Population Served by Sewerage System	Amount of Pollution Discharged to Watercourse (In Terms of Equivalent number of People)
Having data on pollution load discharged to watercourse	0	-	-
Having population data available (Data on pollution load to watercourse incomplete or not available	8	37,700	Not applicable
TOTAL	8	37,700	XXX XXX

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE B (21)

SOURCES OF POLLUTION

INDUSTRIAL

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharge to Watercourse(In Terms of Equiv. No. of People)
Producing Organic Wastes	0	-
Producing Organic Wastes	0	Undetermined
Producing Inorganic Wastes	0	Not Applicable
Producing Wastes of Undetermined Type	* 38	Undetermined
TOTAL	38	xxx xxx

* Industries (only those type normally considered to discharge wastes with polluting characteristics) located in the sub-basin, which may or may not have separate outlets. Information obtained from "Manufacturers of Georgia" prepared by the Georgia Agriculture and Industrial Development Board and supplemented by information from the Georgia State Department of Commerce.

TABLE C (21)

EXISTING TREATMENT FACILITIES

MUNICIPAL

Degree of Treatment Provided	Number Municipalities*	Plants	Population Served
Primary	3	3	6,200
Secondary	0	0	0
No Treatment	5	XXXX	31,500

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE D(21)

EXISTING TREATMENT FACILITIES

INDUSTRIAL *

		Number of Industrial Plants Having:		
Type Industry	Number of Plants	Treatment Facilities	No Treatment Facilities	Undetermined Facilities
Food & Kindred Products	15	0	0	15
Paper & Allied Products	1	0	0	1
Chemical & Allied Products	19	0	0	19
Products of Petroleum and Coal	3	0	0	3

* The industrial plants, listed by type, are from the "Manufacturers of Georgia" (prepared by the Georgia Agricultural and Industrial Development Board) selected as those industries within the sub-basin probably contributing to the pollution of the streams. They may or may not have separate waste outlets discharging directly to watercourse.

TABLE E (21)

ADEQUACY OF EXISTING TREATMENT FACILITIES *

Existing Treatment Facilities	Number	Adequacy with Relation to: Capacity			Operation		
		Satisf.	Unsatisf.	Undetermined	Satisf.	Unsatisf.	Undetermined
Municipal	3	0	0	3	0	0	3
Industrial	0	-	-	-	-	-	-

* The Georgia Water Pollution Agency has made no report.

TABLE $F_{(21)}$

PROGRESS IN POLLUTION ABATEMENT

	Municipal		Industrial	
Year	Plants Completed	Design Population	Plants Completed	Amount of Wastes Treated (In Terms of Equiv. No. People)
1946	0	-	0	-
1947	0	-	0	-
1948	0	-	0	-
1949	0	-	0	-

TABLE G$_{(21)}$

REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL WASTE TREATMENT PLANTS *

Requirements	Municipal		Industrial
	Number	Population Served by Facilities	Number
New Plant	0	-	0
Enlargement or Additions to Existing Plant	0	-	0
Replace Existing Plant	0	-	0
No Project Required	0	-	0
Undetermined	8	37,700	38

* The Georgia Water Pollution Control Agency has made no report.

TABLE $H_{(21)}$

STATUS OF TREATMENT WORKS PROJECT TO ABATE POLLUTION *

July 1,1950

Status of Project	Number	
	Municipal	Industrial
No Formal Action	0	0
Abatement Ordered	0	0
Plans under Preparation	0	0
Final Plans Approved	0	0
Construction Awaiting Financing	0	0
Under Construction	0	0
Status Undetermined	8	38

* The Georgia Water Pollution Control Agency has made no report.

TABLE I

(21)

PROJECT LIST - MUNICIPALITIES AND INDUSTRIES REQUIRING IMPROVEMENTS FOR ABATEMENT OF POLLUTION *

July 1, 1950

* The Georgia Water Pollution Control Agency has made no report.

SUB-BASIN 22

ST. MARYS-NASSAU RIVER BASIN

GENERAL DESCRIPTION

The St. Marys-Nassau River Basin is bounded on the north by the Satilla River Basin, on the east by the Atlantic Ocean and St. Johns River Basin, and on the south and west by the Suwanee River Basin. The St. Marys River rises along the edges of the Okefenokee Swamp of South Georgia, and forms the State line between Florida and Georgia to its mouth at Fernandina.

The Nassau River rises northwest of Jacksonville, Florida and is entirely in Florida, flowing east to the ocean about fifteen miles south of Fernandina. It is more of a type of estuary than a fresh water stream.

The two river basin comprises an area of about 1,957 square miles, of which 1,362 are in Florida and 595 are in Georgia. The entire area consists of typical flat pine land and sand soil, with an occasional stream.

The climate of the area is mild, the average annual temperature for the basin being about sixty-nine degrees. Average annual rainfall varies from forty-eight inches along the coast to fifty-one inches in the western part of the basin. Average discharge of the St. Marys River indicates a run-off of approximately 0.8 cubic feet per second per square mile.

The population of the basin was 27,175 in 1940. The preliminary 1950 census reports indicate a population of 36,087.

ECONOMIC DEVELOPMENT

Fernandina, Florida is the only urban community in the basin. In 1940 its population was about sixteen percent of the total, but according to the preliminary 1950 census this urban center constitutes only fourteen percent of the total population.

Agriculture in the area consists primarily of development of pine woodland for the pulp and paper industry and naval stores.

The chief industry of the area is the production of paper; and including the paper mill at St. Marys, Georgia, on the St. Marys River there are three large paper mills in this area; the other two being at Fernandina. Other industries in the area include: naval stores, shrimp canning plants, and a fish oil and fertilizer producing plant, which uses the pogie as a source of oil and the scraps of the fish for fertilizer. There is also a phosphate rock loading dock, which takes advantage of the very deep harbor.

USE OF WATER RESOURCES

There are five public water supplies in the basin serving 6,800 people. None of these are from surface sources. Surface water resources of the area are primarily used for industrial waste treatment facilities in the basin remains undetermined.

There were no municipal or industrial treatment plants constructed in the basin during the period 1946 through 1949. A special act of the Florida Legislature exempts industries of Nassau County from rules and regulations of the Florida Board of Health regarding pollution of the State's watercourses.

Requirements for abatement of municipal pollution in the basin are three new plants to serve a population of 1,985. This includes two municipalities that need complete sewerage systems. The requirements for waste treatment at six industrial establishments is undetermined.

Final plans have been approved for a treatment plant at one municipality and the status of projects at two municipalities and six industries is undetermined.

TABLE A (22)

SOURCES OF POLLUTION

MUNICIPAL

Municipalities*	Sources of Pollution (In Number of Municipalities)	Population Served by Sewerage System	Amount of Pollution Discharged to Watercourse (In Terms of Equivalent number of People)
Having data on pollution load discharged to watercourse	0	-	-
Having population data available (Data on pollution load to watercourse incomplete or not available)	3	1,450	Not Applicable
TOTAL	**3	1,450	XXX XXX

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

** There are no reported municipal sources of pollution for the Georgia portion of the Sub-basin.

TABLE $B_{(22)}$

SOURCES OF POLLUTION

INDUSTRIAL

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharged to Watercourse (In Terms of Equiv. No. of People)
Producing Organic Wastes	1	*100,000
Producing Organic Wastes	3	Undetermined
Producing Inorganic Wastes	0	Not Applicable
Producing Wastes of Undetermined Type	**2	Undetermined
TOTAL	6	xxx xxx

* Represent only a small portion of waste from this plant, major portion is discharged to the ocean.

** Industries (only those types normally considered to discharge wastes with polluting characteristics) located in the Georgia portion of the sub-basin. Information obtained from "Manufactures of Georgia" prepared by the Georgia Agricultural and Industrial Development Board and supplemented by information from the Georgia State Department of Commerce.

TABLE C (22)

EXISTING TREATMENT FACILITIES

MUNICIPAL

Degree of Treatment Provided	Number Municipalities*	Plants	Population Served
Primary	1	1	500
Secondary	1	**1	200
No Treatment	1	XXXX	750

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

** Sub-surface tile field.

TABLE $D_{(22)}$

EXISTING TREATMENT FACILITIES

INDUSTRIAL*

		Number of Industrial Plants Having:		
Type Industry	Number of Plants	Treatment Facilities	No Treatment Facilities	Undetermined Facilities
Food and Kindred Products	1	0	0	1
Paper and Allied Products	3	0	0	3
Chemical	2	0	0	2

* Industries having separate outlets and discharging wastes directly to watercourse.

TABLE E(22)

ADEQUACY OF EXISTING TREATMENT FACILITIES

Existing Treatment Facilities	Number	Adequacy with Relation to: Capacity			Operation		
		Satisf.	Unsatisf.	Undetermined	Satisf.	Unsatisf.	Undetermined
Municipal	2	2	0	0	2	0	0
Industrial	0	-	-	-	-	-	-

TABLE F(22)

PROGRESS IN POLLUTION ABATEMENT

	Municipal		Industrial	
Year	Plants Completed	Design Population	Plants Completed	Amount of Wastes Treated (In Terms of Equiv. No. People)
1946	0	-	0	-
1947	0	-	0	-
1948	0	-	0	-
1949	0	-	0	-

TABLE $G_{(22)}$

REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL WASTE TREATMENT PLANTS

Requirements	Municipal		Industrial
	Number	Population Served by Facilities	Number
New Plant	*3	1,985	0
Enlargement or Additions to Existing Plant	0	-	0
Replace Existing Plant	0	-	0
No Project Required	2	700	0
Undetermined	0	-	6

* Includes two Florida municipalities that need complete sewerage systems.

TABLE H (22)

STATUS OF TREATMENT WORKS PROJECT TO ABATE POLLUTION

July 1, 1950

Status of Project	Number	
	Municipal	Industrial
No Formal Action	0	0
Abatement Ordered	0	0
Plans under Preparation	0	0
Final Plans Approved	1	0
Construction Awaiting Financing	0	0
Under Construction	0	0
Status Undetermined	2	6

TABLE I (22)

PROJECT LIST - MUNICIPALITIES AND INDUSTRIES REQUIRING IMPROVEMENTS FOR ABATEMENT OF POLLUTION *

July 1, 1950

Name	Population Served	Project Requirements	Remarks
Callahan, Fla.	685	Sewers and Treatment	No municipal sewers
Fernandina, Fla.	750	New Plant	
Hilliard, Fla.	550	Sewers and Treatment	No municipal sewers

* No report for Georgia portion of basin.

SUB-BASIN 23

ST. JOHNS RIVER BASIN

GENERAL DESCRIPTION

The St. Johns River Basin comprises an area of 7,612 square miles entirely within the State of Florida. The basin is bounded on the north and northwest by the St. Marys-Nassau River Basins, on the east by the Atlantic Ocean and Florida East Coastal Area, on the South by the Kissimmee River Basin, and on the west by the Suwanee and Withlacoochee River Basins.

The river arises in the great grassy plain lying about twenty-five miles inland from the east coast of Florida, and flows north through a series of lakes, to the vicinity of Jacksonville, thence east into the Atlantic Ocean at Mayport. The topography of the area in general is flat. Relatively high banks exist along some stretches of the river and tidal effect is felt for about 100 miles above its mouth.

The mean annual rainfall in the basin varies from about fifty inches in the north to fifty-two inches at Orlando. A thirteen year record of U.S. Geological Survey Gauge near Deland, Florida, above tidal effect in the stream shows the average discharge to be 2,904 cubic feet per second, the maximum discharge of 14,400 cubic feet per second and a minimum of ten cubic feet per second.

Mean annual temperatures vary from sixty-nine degrees in the north to seventy-two degrees in the southern part of the basin.

In 1940 the population of the basin was 405,102. The preliminary 1950 census indicates a basin population of 554,133 representing an increase of thirty-seven percent during the past decade.

ECONOMIC DEVELOPMENT

The basin contains thirteen urban communities, comprising fifty-nine percent of the total population. The largest of these is Jacksonville having an estimated population of about 200,000. During the winter months an increase in population is experienced due to the tourist trade

The basin is one of combined ageicultural and industrial economy. In its upper regions the Ocklawaha River, principle tributary of the St. Johns, drains some of the richest citrus groves in the state. The headwaters of the St. Johns River drain thousands of acres of grassy pasture land for beef cattle raising. This basin is part of the area which has enabled Florida to become one of the leading cattle producing states of the union.

Principal industries in the basin are processing of food and kindred products, manufacture of paper and allied products and chemicals.

USE OF WATER RESOURCES

Surface water resources are used primarily for livestock watering, maintenance of ground water levels throughout the agricultural area, fishing and navigation on the St. Johns River. Maintenance of ground water levels is considered one of the major uses and control structures are in operation on a number of the lakes and streams within the basin.

There are fifty-three public water supplies in the St. Johns River Basin serving 476,083 people. The supply at Palatka serving a population of 7,500 is the only one derived from surface waters.

Recreational activities on the rivers of the basin are limited almost entirely to sports fishing and hunting of water fowl. There is some bathing, boating, and water skiing activities on the lakes in the Orlando-Winter Park area.

POLLUTION AND POLLUTION CONTROL

There are some grossly polluted streams in the St. Johns River Basin that in general can be recovered easily for normal water uses.

Available data regarding sources and amounts of domestic and industrial pollution, existing treatment facilities and treatment plant requirements are shown in Tables A to I, inclusive.

Twenty-nine municipalities having a sewered population of 290,641 discharge pollution to the streams and lakes of the basin. Six of these (sixty-two percent of the total population) do not treat their sewage, fifteen have primary treatment plants and eight have secondary treatment facilities.

There are twenty-nine industries in the basin discharging organic wastes directly to watercourses, one of these also produces inorganic wastes. The waste treatment facilities provided by these industries and the amount of pollution discharged in terms of equivalent number of people are undetermined.

Twelve of the twenty-three existing municipal sewage treatment plants are of satisfactory design capacity and thirteen of the twenty-three are satisfactorily operated.

Four new municipal sewage treatment plants, serving 17,440 persons, were constructed during 1948.

Requirements for abatement of municipal pollution in the basin consist of fourteen new treatment plants to serve 193,551, addition to two existing plants serving 17,500, and replacement of one plant to serve a population of 300. No project is required at twelve municipalities and the requirements at twenty-nine industrial establishments are undetermined.

One municipal plant is under construction and plans for three are under preparation. The status of treatment works projects at six municipalities and twenty-nine industries is undetermined.

TABLE $B_{(23)}$

SOURCES OF POLLUTION

INDUSTRIAL

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharged to Watercourse (In Terms of Equiv. No. of People)
Producing Organic Wastes	0	-
Producing Organic Wastes	29	Undetermined
Producing Inorganic Wastes	* 1	Not Applicable
Producing Wastes of Undetermined Type	0	Undetermined
TOTAL	**29	xxx xxx

* Included also under organic wastes

** Total adjusted to correct for duplication noted in footnote marked, *.

TABLE C(23)

EXISTING TREATMENT FACILITIES

MUNICIPAL

Degree of Treatment Provided	Number Municipalities*	Plants	Population Served
Primary	15	15	36,051
Secondary	8	8	69,990
No Treatment	6	XXXX	184,600

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE D(23)

EXISTING TREATMENT FACILITIES

INDUSTRIAL *

Type Industry	Number of Plants	Number of Industrial Plants Having: Treatment Facilities	No Treatment Facilities	Undetermined Facilities
Food and Kindred Products	20	0	0	20
Paper and Allied Products	2	0	0	2
Chemical and Allied Products	5	0	0	5
Products of Petroleum and Coal	1	0	0	1
Miscellaneous	1	0	0	1

* Industries having separate outlets and discharging wastes directly to watercourse.

TABLE E(23)

ADEQUACY OF EXISTING TREATMENT FACILITIES

Existing Treatment Facilities	Number	Adequacy with Relation to:					
		Capacity			Operation		
		Satisf.	Unsatisf.	Undetermined	Satisf.	Unsatisf.	Undetermined
Municipal	23	12	10	1	13	9	1
Industrial	0	-	-	-	-	-	-

TABLE F(23)

PROGRESS IN POLLUTION ABATEMENT

	Municipal		Industrial	
Year	Plants Completed	Design Population	Plants Completed	Amount of Wastes Treated (In Terms of Equiv. No. People)
1946	0	-	0	-
1947	0	-	0	-
1948	4	17,440	1	(*)
1949	0	-	0	-

* Dairy 20,000 gallons per day.

TABLE G (23)

REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL WASTE TREATMENT PLANTS

Requirements	Municipal		Industrial
	Number	Population Served by Facilities	Number
New Plant	14	193,551	0
Enlargement or Additions to Existing Plant	2	17,500	0
Replace Existing Plant	1	300	0
No Project Required	12	79,290	0
Undetermined	0	-	29

TABLE H (23)

STATUS OF TREATMENT WORKS PROJECT TO ABATE POLLUTION

July 1, 1950

Status of Project	Number	
	Municipal	Industrial
No Formal Action	8	0
Abatement Ordered	0	0
Plans under Preparation	3	0
Final Plans Approved	0	0
Construction Awaiting Financing	0	0
Under Construction	1	0
Status Undetermined	6	29

TABLE I(23)

PROJECT LIST - MUNICIPALITIES AND INDUSTRIES REQUIRING IMPROVEMENTS FOR ABATEMENT OF POLLUTION

July 1, 1950

Name	Population Served	Project Requirement	Remarks
Crescent City	300	Replacement of Existing Plant	
East Palatka	1,000	New Plant	
Eustis	2,500	New Plant	Plans under Preparation
Gainesville	14,000	Additions to Existing Plant	Plans under Preparation
Green Cove Springs	1,500	New Plant	
Hastings	815	New Plant	
Jacksonville	170,000	New Plant	
Leesburg	3,500	Additions to Existing Plant	
Mayport	511	New Plant	
Mt. Dora	600	New Plant	Plans under Preparation
Neptune Beach	2,430	New Plant	
Ocala	8,500	-	Plant under Construction
Orange Park	300	New Plant	
Palatka	4,800	New Plant	
Penny Farms	400	New Plant	
Sanford	7,000	New Plant	
Umatilla	350	New Plant	
Wildwood	1,345	New Plant	

SUB-BASIN 24

SUWANEE RIVER BASIN

GENERAL DESCRIPTION

The Suwanee River basin is bounded on the north by the Ocmulgee and Satilla River Basins, on the east by the St. Marys-Nassau, St. Johns and Withlachoochee River Basins, on the southwest by the Gulf of Mexico and Ochlockonee-St. Marks River Basin and on the west by the Flint River Basin. The Suwanee River rises in the Okefenokee Swamp of southeast Georgia, but three principal tributaries the Alapaha, Withlachoochee and Little Rivers have their headwaters in south central Georgia. The basin contains about 9,941 square miles, of which 5,546 are in Georgia and 4,395 are in Florida.

The Suwanee flows in a very meandering course from Georgia across Florida, entering the Gulf of Mexico just south of Cross City. Practically all of the drainage area is relatively flat with light sandy soil in the south central portion, giving way to gently rolling hills and some clay in the northern section of the area. The lower part of the basin is characterized by outcroping of lime rock near or on the surface of the ground and both the Suwanee and Santa Fe River, a major tributary in Florida flow through cuts in the limestone formation. There are numerous springs along the banks of rivers in the basin, which add to the surface run-off. In Florida, the largest of these springs are: Worthington Springs, Big Putnam Springs and Fanning Springs.

Mean annual temperatures throughout the basin range from sixty-nine to seventy-one degrees. Frosts in the area are infrequent. Rainfall is ralatively even throughout the basin averaging about fifty-three inches per year. A fifteen year record at the U.S. Geological Survey gauge near the mouth of the Suwanee River at Bell Florida shows the minimum discharge during the period to be 2,790 cubic feet per second.

The 1940 population of the basin was 297,448 and the 1950 preliminary census indicates a population of 316,688.

ECONOMIC DEVELOPMENT

There are fifteen urban communities in the basin, of which ten are in Georgia, and five in Florida. The urban population based on the 1950 preliminary census report is 109,930, approximately thirty-five percent of the total basin population.

The farm products in Florida consist of corn, tobacco, peanuts and cotton. Rows of pecan and tung oil trees are prominent throughout the area.

The principal industries are those connected with the extensive forests and food processing. The naval stores industry is particularly important throughout the basin.

USE OF WATER RESOURCES

There are forty-nine public water supplies in the basin, about equally divided between Georgia and Florida. These supplies all derived from ground waters, serve a population of 84,810.

Practically all the streams in this area are considered good sport fishing waters, and there is some commercial fishing in the streams near the Gulf. In general, however, the recreational value of all the waters in this drainage area are due to the quantities of fish available and to the attractiveness of the rivers themselves. An abundance of wildlife and water fowl are found throughout the basin from the Okefenokee Swamp to the Gulf of Mexico.

POLLUTION AND POLLUTION CONTROL

Available data regarding sources and amounts of domestic and industrial pollution, existing treatment facilities and treatment plant requirements are shown in tables A through I, inclusive.

There are twenty municipal sources of pollution in the basin having a combined sewered population of 49,275. Seventy industries of a type normally considered to dis charge wastes with pollution characteristics, which may or may not have separate outlets to watercourses discharge wastes of an undetermined type and amount.

Fourteen municipalities have fifteen primary sewage treatment plants serving a combined population of 28,675. Two municipalities have secondary treatment plants with a connected population of 6,400. No treatment is provided for the sewage from 14,200 people at five municipalities.

Treatment facilities of industrial establishments in the basin are undetermined. Of the seventeen municipal sewage treatment plants the capacity of eight is reported to be adequate with relation to capacity, and the remainder are undetermined. Adequacy with relation to operation of two municipal plants is satisfactory, six unsatisfactory, and nine undetermined.

No municipal or industrial waste treatment plants were constructed in the basin during the period 1946 through 1949. Requirements for the abatement of pollution are nine new plants to serve a population of 9,141, enlargement or addition of two municipal plants serving a population of 6,250 and the requirements at eleven municipalities and seventy industries are undetermined.

One municipal sewage treatment plant is under construction. Plans are under preparation at one municipality and abatement of pollution has been ordered at a third. No formal action has been taken with three municipalities in regard to treatment of their sewage. The status of treatment works projects to abate pollution at sixteen municipalities and seventy industries remains undetermined.

TABLE A(24)

SOURCES OF POLLUTION

MUNICIPAL

Municipalities*	Sources of Pollution (In Number of Municipalities)	Population Served by Sewerage System	Amount of Pollution Discharged to Watercourse (In Terms of Equivalent number of People)
Having data on pollution load discharged to watercourse	0	-	-
Having population data available (Data on pollution load to watercourse incomplete or not available)	20	49,275	Not applicable
TOTAL	20	49,275	XXX XXX

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE B(24)

SOURCES OF POLLUTION

INDUSTRIAL

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharged to Watercourse (In Terms of Equiv. No. of People)
Producing Organic Wastes	0	-
Producing Organic Wastes	0	Undetermined
Producing Inorganic Wastes	0	Not Applicable
Producing Wastes of Undetermined Type	*70	Undetermined
TOTAL	70	xxx xxx

* Industries (only those types normally considered to discharge wastes with polluting characteristics) located in the Georgia portion of the sub-basin, which may or may not have separate outlets. Information obtained from "Manufactures of Georgia" prepared by the Georgia Agricultural and Industrial Development Board and supplemented by information from the Georgia State Department of Commerce.

TABLE $C_{(24)}$

EXISTING TREATMENT FACILITIES

MUNICIPAL

Degree of Treatment Provided	Number Municipalities*	Plants	Population Served
Primary	**14	*** 15	28,675
Secondary	2	2	6,400
No Treatment	5	XXX	14,200

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

** One municipality also included in secondary treatment.

*** 1 Effluent discharged to ground water
1 Effluent discharged to surface water of undetermined drainage.

TABLE D(24)

EXISTING TREATMENT FACILITIES

INDUSTRIAL *

Type Industry	Number of Plants	Number of Industrial Plants Having: Treatment Facilities	No Treatment Facilities	Undetermined Facilities
Food and Kindred Products	22	0	0	22
Textile Mill Products	3	0	0	3
Chemical and Allied Products	44	0	0	44
Miscellaneous	1	0	0	1

* Industries having separate outlets and discharging wastes directly to watercourse.

TABLE E (24)

ADEQUACY OF EXISTING TREATMENT FACILITIES*

Existing Treatment Facilities	Number	Adequacy with Relation to: Capacity			Operation		
		Satisf.	Unsatisf.	Undetermined	Satisf.	Unsatisf.	Undetermined
Municipal	17	0	8	9	2	6	9
Industrial	0	-	-	-	-	-	-

* No report for Georgia portion of sub-basin.

TABLE $F_{(24)}$

PROGRESS IN POLLUTION ABATEMENT

	Municipal		Industrial	
Year	Plants Completed	Design Population	Plants Completed	Amount of Wastes Treated (In Terms of Equiv. No. People)
1946	0	-	0	-
1947	0	-	0	-
1948	0	-	0	-
1949	0	-	0	-

TABLE $G_{(24)}$

REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL WASTE TREATMENT PLANTS

Requirements	Municipal		Industrial
	Number	Population Served by Facilities	Number
New Plant	*9	9,141	0
Enlargement or Additions to Existing Plant	2	6,250	0
Replace Existing Plant	0	0	0
No Project Required	1	4,000	0
Undetermined	11	33,150	70

* Includes three Florida municipalities that need complete sewerage systems.

TABLE H(24)

STATUS OF TREATMENT WORKS PROJECT TO ABATE POLLUTION

July 1, 1950

Status of Project	Number	
	Municipal	Industrial
No Formal Action	3	0
Abatement Ordered	1	0
Plans under Preparation	1	0
Final Plans Approved	0	0
Construction Awaiting Financing	0	0
Under Construction	1	0
Status Undetermined	16	70

TABLE I(24)

PROJECT LIST - MUNICIPALITIES AND INDUSTRIES REQUIRING IMPROVEMENTS FOR ABATEMENT OF POLLUTION*

July 1, 1950

Name	Population Served	Project Requirement	Remarks
Branford, Fla.	1,616	Sewers & Treatment	No Municipal Sewers
Jasper, Fla.	1,200	New Plant	
Lake Butler,Fla.	275	New Plant	
Lake City, Fla.	4,000	Enlarge Plant	
Live Oak, Fla.	2,000	New Plant	
Madison, Fla.	1,600	New Plant	
Mayo, Fla.	877	Sewers & Treatment	No Municipal Sewers
Raiford, Fla.	2,250	New Plant	
Trenton, Fla.	773	Sewers & Treatment	No Municipal Sewers
Waldo, Fla.	500	New Plant	
White Springs, Fla.	300	New Plant	

* No report for Georgia portion of sub-basin.

SUB-BASIN 25

OCHLOCKONEE-ST. MARKS RIVER BASIN

GENERAL DESCRIPTION

The Ochlockonee-St. Marks River Basin is bounded by the Suwannee River Basin on the east, the Flint River Basin on the northwest, the Apalachicola River BAsin on the west, and by the Gulf of Mexico on the south. There are approximately 6658 square miles contained by the basin, of which 5078 square miles lie in Florida and 1580 square miles in Georgia. The three principal streams of the basin are the Ochlockonee and Aucilla Rivers which have headwaters in southern Georgia, and the St. Marks which has its source at Lake Lafayette, about ten miles east of Tallahassee. Each of these rivers drains to the Gulf of Mexico, the Ochlockonee entering at Apalachee BAy, the Aucilla at Monticello, and the St. Marks at St. Marks. There are a number of smaller streams and tributaries in the basin, the more important being, from west to east, the New River, Wacissa River, Econfina River, and Fenholloway River.

Topographical features of the basin are not outstanding, the northern section having low rolling hills, with very flat coastal plains near the Gulf. Much of the coastal plain area is made up of nearly impenetrable swampland, particularly near the streams.

Rainfall in the basin varies from about 48 inches in the northern, or Georgia part of the basin, to around 56 inches along the coast.

Precipitation is fairly uniform through most of the year, the highest monthly averages being recorded during the months of June through September.

The Ochlockonee is the largest stream of the basin having an average annual flow of 1,582 cubic feet per second, varying from a maximum of 19,900 cubic feet per second to a minimum of practically no flow.*

Average yearly temperatures vary from about 65 degrees in the north part to 67 degrees in the south central Florida area. Frost free days average about 250 days in the Georgia portion to 280 days in Florida.

ECONOMIC DEVELOPMENT

The estimated 1940 population of the basin was 166,787, of which twenty-six percent was urban. The preliminary 1950 census indicates a total of 184,709 persons of which thirty-three percent are urban. The urban population is contained in six municipalities,of which three are in Florida and three in Georgia.

The largest proportion of the population of the basin is engaged in agricultural pursuits. Principle crops are corn, cotton, peanuts and tobacco. Richest farm land of the area is probably in the vicinity of Quincy, Florida, which is noted for shade tobacoo production. A few communities along the Florida coast are commercial fishing centers. However, coastal lands are composed largely of sparsely settled forested swamp areas which grow saw timber and pulp wood. Several large lumber mills are located at Perry, Florida.

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* U.S.G.S. data--21 years average.

Coastal cities, chief of which are Carrabelle, Panacea, St. Marks, St. Theresa and Wakulla are centers of tourist attraction.

Industries in the basin area are primarily those related to food processing, and chemical and allied industries. There are also some lumber mills and textile plants in the area.

USE OF WATER RESOURCES

There are a total of thirty-one municipal water supplies in the basin area, thirty of which are from ground waters and serve a total of 56,500 people. One surface supply serves a population of 5,500.

The waters of the basin, both fresh and salt, are noted as sport fishing grounds. Commercial fishing flourishes along the Gulf coast at Carrabelle, St. Marks, and Panacea. The streams are not generally popular for bathing, although boating is practiced extensively. The nature of the streams are mostly slow-moving and meandering. In Florida, they are usually highly colored from coursing through cypress swamps.

There are no major power developments of the streams in the area.

The chief port for shipping is St. Marks, Florida, with Carrabelle and Panacea next in importance. There is no noteworthy inland navigation.

POLLUTION AND POLLUTION CONTROL

Available data regarding sources of domestic and industrial pollution, existing treatment facilities and treatment plant requirements are shown in Tables A to I, inclusive.

Twelve municipalities with a sewered population of 52,300 discharge sewage to watercourses of the basin. Forty-five industries which normally are considered to discharge wastes with polluting characteristics and which may or may not have separate outlets are located in the basin. One industry located in Florida produces organic wastes for which the amount of pollution is undetermined. The types and amounts of pollution discharged by the forty-four industries located in Georgia have not been supplies to this office by the Georgia Water Pollution Control Agency.

Six municipalities serving 6,700 persons have six primary treatment plants. Four having five plants providing secondary treatment serve 44,200 persons; and two municipalities with a sewered population of 1,400 have no treatment. In Florida the adequacy of design capacity of three plants are satisfactory and three unsatisfactory; operation is considered satisfactory at two plants and unsatisfactory at four. Data regarding adequacy of treatment of municipal and industrial wastes for the Georgia portion of the basin have not been supplied this office. During the period 1946-1949 one treatment plant for municipal wastes has been completed. No industrial waste treatment plants have been completed during this period.

The status of treatment works projects to abate pollution in Georgia has not been furnished for use in this report by the Georgia Water Pollution Control Agency. It is reported that six new plants are required in Florida. Plans are under preparation at one of these municipalities. No formal action has been taken with the remaining cities.

TABLE A(25)

SOURCES OF POLLUTION

MUNICIPAL

Municipalities*	Sources of Pollution (In Number of Municipalities)	Population Served by Sewerage System	Amount of Pollution Discharged to watercourse (In Terms of Equivalent number of People)
Having data on pollution load discharged to watercourse	0	-	-
Having population data available (Data on pollution load to watercourse incomplete or not available)	12	52,300	Not applicable
TOTAL	12	52,300	XXX XXX

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE B(25)

SOURCES OF POLLUTION

INDUSTRIAL

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharged to Watercourse (In Terms of Equiv. No. of People)
Producing Organic Wastes	0	-
Producing Organic Wastes	1	Undetermined
Producing Inorganic Wastes	0	Not Applicable
Producing Wastes of Undetermined Type	*44	Undetermined
TOTAL	45	xxx xxx

* Industries (only those types normally considered to discharge wastes with polluting characteristics) located in the Georgia portion of the sub-basin, which may or may not have separate outlets. Information obtained from "Manufactures of Georgia" prepared by the Georgia Agricultural and Industrial Development Board and supplemented by information from the Georgia State Department of Commerce.

TABLE C(25)

EXISTING TREATMENT FACILITIES

MUNICIPAL

Degree of Treatment Provided	Number Municipalities*	Number Plants	Population Served
Primary	6	6	6,700
Secondary	4	**5	44,200
No Treatment	2	XXXX	1,400

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

** Effluent of two Florida Plants discharge to surface waters with undetermined drainage.

TABLE D(25)

EXISTING TREATMENT FACILITIES

INDUSTRIAL*

Type Industry	Number of Plants	Number of Industrial Plants Having: Treatment Facilities	No Treatment Facilities	Undetermined Facilities
Food and Kindred Products	24	0	0	24
Textile Mill Products	1	0	0	1
Chemical and Allied Products	19	0	0	19
Miscellaneous	1	0	0	1

* Industries having separate outlets and discharging wastes directly to watercourse.

TABLE E(25)

ADEQUACY OF EXISTING TREATMENT FACILITIES*

Existing Treatment Facilities	Number	Adequacy with Relation to: Capacity			Operation		
		Satisf.	Unsatisf.	Undetermined	Satisf.	Unsatisf.	Undetermined
Municipal	11	3	3	5	2	4	5
Industrial	0	-	-	-	-	-	-

* No report for Georgia portion of sub-basin.

TABLE $F_{(25)}$

PROGRESS IN POLLUTION ABATEMENT

	Municipal		Industrial	
Year	Plants Completed	Design Population	Plants Completed	Amount of Wastes Treated (In Terms of Equiv. No.People)
1946	0	-	0	-
1947	0	-	0	-
1948	0	-	0	-
1949	1	35,000	0	-

TABLE G (25)

REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL WASTE TREATMENT PLANTS

Requirements	Municipal		Industrial
	Number	Population Served by Facilities	Number
New Plant	* 6	8,219	-
Enlargement or Additions to Existing Plant	0	-	-
Replace Existing Plant	0	-	-
No Project Required	3	24,500	-
Undetermined	5	21,400	45

* Includes one Florida municipality that needs a complete sewerage system.

TABLE H (25)

STATUS OF TREATMENT WORKS PROJECT TO ABATE POLLUTION

July 1, 1950

Status of Project	Number	
	Municipal	Industrial
No Formal Action	2	0
Abatement Ordered	0	0
Plans under Preparation	1	0
Final Plans Approved	0	0
Construction Awaiting Financing	0	0
Under Construction	0	0
Status Undetermined	8	45

TABLE I(25)

PROJECT LIST - MUNICIPALITIES AND INDUSTRIES REQUIRING IMPROVEMENTS FOR ABATEMENT OF POLLUTION*

July 1, 1950

Name	Population Served	Project Requirements	Remarks
Cross City, Fla.	1,819	Sewers and Treatment	No Municipal Sewers
Foley, Fla.	200	New Plant	
Havana, Fla.	200	New Plant	
Monticello, Fla.	1,500	New Plant	
Perry, Fla.	1,200	New Plant	
Quincy, Fla.	3,300	New Plant	

* No report for Georgia portion of sub-basin.

SUB-BASIN 26

WITHLACOOCHEE RIVER BASIN

GENERAL DESCRIPTION

The Withlacoochee River Basin lies entirely in Florida. It is bounded on the northeast and east by the St. Johns and Kissimmee River Basins, on the south by the Peace River Basin, on the southwest by the Tampa Bay Area and Gulf of Mexico, and on the northwest by the Suwannee River Basin.

The river originates in a large flat grassland in the central part of the State and meanders sluggishly through heavily wooded swamps and open grasslands in a general northwesterly direction to the Gulf of Mexico.

The area of the basin is about 3,504 square miles. The average annual rainfall varies with location from forty-five inches to fifty-three inches. A sixteen year record of the U.S. Geological Survey gauge at Holder, Florida, where the watershed area is 1,590 square miles, shows the average discharge to be 1,060 cubic feet per second. The maximum discharge at this point was 6,740 cubic feet per second, and the minimum was 144 cubic feet per second.

The mean annual temperature of this area varies from seventy to seventy-three degrees. The average number of days annually without killing frosts varies from 310 to 365.

The total population of the basin in 1940 was 58,773. The preliminary 1950 census reports indicate a population increase to 68,609.

ECONOMIC DEVELOPMENT

The basin contains only one urban community which comprises six percent of the population.

The growing of citrus fruit and the related industries of packing, canning, and the processing of pulp for stock food and molasses are the chief sources of income in the basin.

USES OF WATER RESOURCES

There are nineteen public water supplies in the basin, one of which serving 630 people is from a surface source.

The entire Withlacoochee River is excellent and popular fishing territory, but much of the stream is practically inaccessable. Little other recreational use is made of the stream because it is too shallow during much of the year for navigation. There are, however, considerable fish and wildlife resources here.

The river is used to some extent for irrigation and there is a single small hydroelectric plant located at Inglis.

Commercial fishing and shellfish gathering are engaged in at Cedar Key off the coast.

POLLUTION AND POLLUTION CONTROL

Available data regarding sources and amounts of domestic and industrial pollution, existing treatment facilities, and treatment plant requirements are shown in Table A through I, inclusive.

Five municipalities with a sewered population of 5,350 and one industry producing organic waste with a population equivalent of 52,500 discharge waste directly to streams.

Four municipalities have primary treatment plants serving 3,300 people. Two (including one also having a primary treatment plant for a part of its sewage) provide no treatment to sewage from 2,050 people. The one industry discharging directly to the stream has undetermined treatment facilities.

All four of the municipal treatment plants are unsatisfactory with respect to capacity and operation.

No municipal or industrial waste treatment plants have been completed in the period 1946-1949. Requirements for industrial waste treatment plants are undetermined. Construction of five new municipal waste treatment plants to serve a population of 5,350 are required.

Final plans have been approved at one municipality for a new treatment plant and construction is awaiting financing at another. No formal action has been taken with a third community. The status of treatment works projects at two other communities and at one industry are undetermined.

TABLE A (26)

SOURCES OF POLLUTION

MUNICIPAL

Municipalities*	Sources of Pollution (In Number of Municipalities)	Population Served by Sewerage System	Amount of Pollution Discharged to Watercourse (In Terms of Equivalent number of People)
Having data on pollution load discharged to watercourse	0	-	-
Having population data available (Data on pollution load to watercourse incomplete or not available)	5	5,350	Not applicable
TOTAL	5	5,350	XXXXXX

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE B(26)

SOURCES OF POLLUTION

INDUSTRIAL

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharged to Watercourse (In Terms of Equiv. No. of People)
Producing Organic Wastes	1	52,500
Producing Organic Wastes	0	Undetermined
Producing Inorganic Wastes	0	Not Applicable
Producing Wastes of Undetermined Type	0	Undetermined
TOTAL	1	xxx xxx

TABLE C (26)

EXISTING TREATMENT FACILITIES

MUNICIPAL

Degree of Treatment Provided	Number Municipalities*	Plants	Population Served
Primary	4	4	3,300
Secondary	0	-	-
No Treatment	2	XXXX	2,050

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE D (26)

EXISTING TREATMENT FACILITIES

INDUSTRIAL *

Type Industry	Number of Plants	Number of Industrial Plants Having: Treatment Facilities	No Treatment Facilities	Undetermined Facilities
Food and Kindred Products	1	0	0	1

* Industries having separate outlets and discharging wastes directly to watercourse.

TABLE E (26)

ADEQUACY OF EXISTING TREATMENT FACILITIES

Existing Treatment Facilities	Number	Adequacy with Relation to: Capacity			Operation		
		Satisf.	Unsatisf.	Undetermined	Satisf.	Unsatisf.	Undetermined
Municipal	4	0	4	0	0	4	0
Industrial	0	-	-	-	-	-	-

TABLE F (26)

PROGRESS IN POLLUTION ABATEMENT

	Municipal		Industrial	
Year	Plants Completed	Design Population	Plants Completed	Amount of Wastes Treated (In Terms of Equiv.No.People)
1946	0	-	0	-
1947	0	-	0	-
1948	0	-	0	-
1949	0	-	0	-

TABLE G (26)

REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL WASTE TREATMENT PLANTS

Requirements	Municipal		Industrial
	Number	Population Served by Facilities	Number
New Plant	5	5,350	0
Enlargement or Additions to Existing Plant	0	-	0
Replace Existing Plant	0	-	0
No Project Required	0	-	0
Undetermined	0	-	1

TABLE H(26)

STATUS OF TREATMENT WORKS PROJECT TO ABATE POLLUTION

July 1, 1950

Status of Project	Number	
	Municipal	Industrial
No Formal Action	1	0
Abatement Ordered	0	0
Plans under Preparation	0	0
Final Plans Approved	1	0
Construction Awaiting Financing	1	0
Under Construction	0	0
Status Undetermined	2	1

TABLE I(26)

PROJECT LIST - MUNICIPALITIES AND INDUSTRIES REQUIRING IMPROVEMENTS FOR ABATEMENT OF POLLUTION

July 1, 1950

Name	Population Served	Project Requirements	Remarks
Cedar Key, Fla.	400	New Plant	
Dade City, Fla.	1,800	New Plant	Construction Awaiting Financing
Dunnellon, Fla.	1,150	New Plant	
Inverness, Fla.	1,900	New Plant	Final Plans Approved
Williston, Fla.	100	New Plant	
Food and Kindred Products	52,500	One Undetermined	

SUB-BASIN 27

TAMPA BAY AREA

GENERAL DESCRIPTION

Tampa Bay is a deep two-pronged bay midway down the Gulf Coast of Florida. The drainage area is situated around this bay. The area, comprising 3,500 square miles entirely within Florida, is made up of the several small watersheds lying between and to the west of the Withlacoochee and Peace River Basin and draining to the Gulf of Mexico either thru or near Tampa Bay. The principal streams of the area are, from north to south: Anclote River, Hillsborough River, Alafia River, Little Manatee River, Manatee River, and, a tributary of the Manatee River, Baden River. These rivers are relatively short, rising not more than thirty miles inland, have flat slopes and wind considerably before reaching tidal estuaries of the Bay or Gulf.

The area is low and flat and contains numerous lakes sinks, marshes and woodlands. The shore, frequently indented with tidal estuaries and bayous is separated from the Gulf by numerous off-shore islands which form protected shallow bays.

The climate of the region is semi-tropical with rainfall limited in winter and bountiful in summer. Mean annual temperatures average in the low seventys and mean annual rainfall, in inches, is from the high fortys to low fiftys. Killing frosts may come as often as once a year but often not more than once every other year. The area is subject to tropical hurricanes during late summer and early fall.

There are run-off records for four watersheds of the area, namely: the Hillsborough, Alafia, Little Manatee, and Manatee River Basins from which the run-off averages a little over 1 cfs per square mile. In the northern part of the area drainage is very poor and run-off is negligable.

Based on United States Census figures the area's population was 353,266 in 1940.

The 1950 preliminary census indicates a population of 489,713, an increase of 39 percent over 1940.

ECONOMIC DEVELOPMENT

More than half of the population is found in the larger cities, namely: Tampa, St. Petersburg, Sarasota, Clearwater, and Bradenton, all of which are located on the coast. In the northern section of the area population is sparce, most of the non-urban population being found in the southern half of the basin. In 1940 over two-thirds of the population was urban; in 1950 the urban population is estimated to be about 60 percent. Due to the increased number of unincorporated communities in the past decade, population of urban density probably exceeds that estimated for 1940. The urban communities as listed by the census numbered nine in 1940 and twelve in 1950. During the winter months there is an influx of tourists which almost doubles the population of the cities.

The area is bountifully provided with natural resources, of which perhaps the most outstanding is climate. There are fertile soils which support some of the principal truck crops of the State as well as leading citrus fruits and strawberry crops in the nation. Watered areas inland and the sea coast combine with the climate to provide one of the nation's winter playgrounds.

Some of the country's most lucritive phosphate ore is mined and processed in the southern section of the area and in the adjoining Peace River Basin Agriculture is the leading pursuit in the areas around Plant City and between Tampa and Palmetto. The former is the country's leading strawberry center and the latter contains one of the State's chief winter, truck farming sections. Extensive citrus groves and some of the State's leading cattle production are in the area. Fishery resources provide for considerable employment along the coast and considerable sport throughout the entire area.

Florida's Gulf Coast "Gold Coast", from New Port Richey all the way to Venice including much of the shores of Tampa Bay enjoys a prosperous tourist trade. The Gulf

Beaches from Du:edin to Pass-A-Grille and Bradenton to Sarasota, and on to Venice, is a continuous resort, winter and summer. Numerous other tourist attractions are found throughout the area; among them are the art and cultural center and circus winter quarters at Sarasota, Weekiwachee Springs south of Crystal River, the sponge fleet and exchange at Tarpon Springs.

Industry is for the most part centered at Tampa though a variety of small industries are found throughout the area.

Some of the more important industries are: Processing of food, such as fruits, vegetables, and meat; mining and production of chemicals, and allied products, cigars, sponges, and boat building.

USE OF WATER RESOURCES

In the area there are forty-six public water supplies serving 436,060 people. Of these only three, serving 190,000 people, are derived from surface-water sources and one of the three derives half of its water from ground sources.

Specific information on industrial water supplies is not available but considerable water is used for industrial and agricultural purposes.

Water along with the climate makes this area a recreation spot of national importance. Parks and memorials have been developed for recreational use. Bathing and boating are quite widespread as well as fishing. Commercial fishing is an important pursuit and shellfish is of commercial importance though pollution of the water has decreased its value. Fish and wildlife of the area attract hunters from places hundreds of miles distant.

Tampa harbor is one of Florida's major harbors handling about four million tons annually of export-import and coastwise shipments. Current plans of the U.S. Army Engineers call for improvements of harbors and navigation channels in the area.

POLLUTION AND POLLUTION CONTROL

Available data regarding sources and amounts of domestic and industrial pollution, existing treatment facilities, and treatment plant requirements are shown in Table A through I, inclusive.

Waters of the area receive sewage effluent from twenty-nine communities, twenty-eight of which serve 337,345 people. The currently reported industrial pollution (other than that included in municipal systems) amounts to that from sixteen establishments.

Existing treatment facilities of the area are reported to be seventeen primary sewage treatment plants serving 192,165 people of seventeen municipalities. Of these plants thirteen are considered to be of unsatisfactory design capacity and twelve are unsatisfactorily operated.

Adequacy of two plants is undetermined. Treatment of industrial wastes in the basin is undetermined. In 1949 two new sewage plants were built to serve a design population of 2,350. No other plants, neither domestic or industrial, were constructed during the period 1946 through 1949.

Treatment plant requirements include sixteen new plants, fifteen of which would serve 162,780 people, two plant enlargements or additions to serve 10,635 people, and seven replacement plants to serve 158,680 people. No project is required for three existing plants serving 4,250 people. There are 1,000 people served by one system for which project requirements have not been determined.

Progress in pollution abatement is indicated by the four projects under construction and preparation of plans at another. No formal action has been taken to initiate fifteen projects and for six others the progress of abatement has not been determined.

TABLE A

(27)

SOURCES OF POLLUTION

MUNICIPAL

Municipalities*	Sources of Pollution (In Number of Municipalities)	Population Served by Sewerage System	Amount of Pollutio Discharged to Wate course (In Terms o Equivalent number of People)
Having data on pollution load discharged to watercourse	0	-	-
Having population data available (Data on pollution load to watercourse incomplete or not available)	28	337,345	Not applicable
TOTAL	**29	337,345	XXX XXX

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

** Includes one source for which no population served or pollution discharged figures are available.

TABLE B (27)

SOURCES OF POLLUTION

INDUSTRIAL

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharged to Watercourse (In Terms of Equiv. No. of People)
Producing Organic Wastes	0	-
Producing Organic Wastes	11	Undetermined
Producing Inorganic Wastes	*6	Not Applicable
Producing Wastes of Undetermined Type	0	Undetermined
TOTAL	**16	xxx xxx

* Includes one plant also producing organic wastes.

** Total adjusted to correct for duplication noted in footnote marked thus, *.

TABLE C(27)

EXISTING TREATMENT FACILITIES

MUNICIPAL

Degree of Treatment Provided	Number Municipalities*	Plants	Population Served
Primary	17	17	192,165
Secondary	0	-	-
No Treatment	11	XXXX	145,180

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE D(27)

EXISTING TREATMENT FACILITIES

INDUSTRIAL *

Type Industry	Number of Plants	Number of Industrial Plants Having: Treatment Facilities	No Treatment Facilities	Undetermine Facilities
Food and Kindred Products	8	0	0	8
Chemical and Allied Products	2	0	0	2
Leather and Leather Products	1	0	0	1
Mining(phosphate)	5	0	0	5

* Industries having separate outlets and discharging wastes directly to watercourse.

TABLE E(27)

ADEQUACY OF EXISTING TREATMENT FACILITIES

Existing Treatment Facilities	Number	Adequacy with Relation to:					
		Capacity			Operation		
		Satisf.	Unsatisf.	Undetermined	Satisf.	Unsatisf.	Undetermined
Municipal	17	2	13	2	3	12	2
Industrial	0	-	-	-	-	-	-

TABLE F(27)

PROGRESS IN POLLUTION ABATEMENT

	Municipal		Industrial	
Year	Plants Completed	Design Population	Plants Completed	Amount of Wastes Treated (In Terms of Equiv.No.People)
1946	0	-	0	-
1947	0	-	0	-
1948	0	-	0	-
1949	2	2,350	0	-

TABLE G(27)

REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL WASTE TREATMENT PLANTS

Requirements	Municipal		Industrial
	Number	Population Served by Facilities	Number
New Plant	*16	162,780	-
Enlargement or Additions to Existing Plant	2	10,635	0
Replace Existing Plant	7	158,680	0
No Project Required	3	4,250	0
Undetermined	1	1,000	16

* Includes one plant for which no population served figure is available.

TABLE H (27)

STATUS OF TREATMENT WORKS PROJECT TO ABATE POLLUTION

July 1, 1950

Status of Project	Number Municipal	Industrial
No Formal Action	15	0
Abatement Ordered	0	0
Plans under Preparation	1	0
Final Plans Approved	0	0
Construction Awaiting Financing	0	0
Under Construction	4	0
Status Undetermined	6	16

TABLE I (27)

PROJECT LIST - MUNICIPALITIES AND INDUSTRIES REQUIRING IMPROVEMENTS FOR ABATEMENT OF POLLUTION

July 1,1950

Name	Population Served	Project Requirements	Remarks
Bradenton, Fla.	7,500	New Plant	
Brooksville, Fla.	1,000	Undetermined	
Clearwater, Fla.	10,135	Additions to Existing Plant	
Crystal River, Fla.	500	Enlargement of Existing Plant	
Ellenton, Fla.	400	New Plant	
Largo, Fla.	1,000	Replacement of Existing Plant	
County Home,Fla.	200	Replacement of Existing Plant	
Mulberry, Fla.	1,600	Replacement of Existing Plant	
New Port Richey,Fla.	600	New Plant	
Palmetto, Fla.	3,500	New Plant	
Pass-a-Grille Beach,Fla.	900	New Plant	Plans under Preparation
Pierce, Fla.	800	New Plant	
Plant City,Fla.	5,030	Replacement of Existing Plant	Under Construction
Port Tampa,Fla.	500	Replacement of Existing Plant	
Safety Harbor,Fla.	350	Replacement of Existing Plant	
St.Petersburg,Fla.	150,000	Replacement of Existing Plant	
Sarasota, Fla.	10,000	New Plant	Under Construction
Sulphur Springs,Fla.	530	New Plant	
Tampa, Fla.	117,000	New Plant	Under Construction
McDill Air Base	6,000	New Plant	
Maryland Park	2,650	New Plant	

Table I(27)

Name	Population Served	Project Requirements	Remarks
New Suburb Beautiful	1,000	New Plant	
Orient Park	Not known	New Plant	
Palma Ceia Park	4,600	New Plant	
Virginia Park	3,800	New Plant	
Tarpon Springs, Fla.	3,500	New Plant	Under Construction
Food and Kindred Products	Not known	Eight Undetermined	
Chemical and Allied Products	Not known	Two Undetermined	
Leather and Leather Products	Not known	One Undetermined	
Mining(phosphate)	Not known	Five Undetermined	

SUB-BASIN 28

PEACE RIVER BASIN

GENERAL DESCRIPTION

The Peace River Basin lies entirely in Florida. It is bounded on the north by the Withlacoochee River Basin, on the east by the Kissimmee River Basin and Lower Florida Area, on the southwest by the Gulf of Mexico, and on the west by the Tampa Bay Area.

The Peace River arises in the lake region of Central Florida and flows in a general southerly direction to enter the Gulf of Mexico through Charlotte Harbor. The topography of the basin is flat to the extent that the boundaries in some areas are difficult to determine. The northern part of the basin has numerous natural lakes.

The total drainage area is approximately 2,902 square miles.

Average annual rainfall is about fifty-five inches in the northern part of the basin and nearly fifty-one inches toward the southern extremity. A sixteen year record of the U.S. Geological Survey gauge at Arcadia, where the drainage area is 1,380 square miles, shows the average discharge to be 1,191 cubic feet per second. The maximum discharge at this point was 36,200 cubic feet per second, and the minimum was 41 cubic feet per second. A second major stream in the basin, the Myakka

River which flows into Charlotte Bay to the west of the Peace River, has a smaller discharge

The climate of the basin is semi-tropical. The mean annual temperature varies from about seventy-two degrees in the northern end of the area to nearly seventy-four degrees in the south.

The total population of the basin based upon the 1940 census was 55,879. The preliminary 1950 census reports a population of approximately 103,231, or an increase of about eighty-five percent over that of 1940.

ECONOMIC DEVELOPMENT

The basin contains seven urban communities which comprise sixty percent of the total population. In 1940 there were six urban communities which comprised forty-four percent of the total. Five of these communities are located in Polk County. The population is principally distributed along the Peace River, and along the western divide between this basin and the Tampa Bay Area.

Agriculture is the chief occupation in the basin, particularly the growing of citrus fruits, but many square miles are entirely devoted to grasslands that are used for beef cattle grazing.

The major industry, other than agriculture is the mining of phosphate rock. This basin, and to a lesser extent, the Alafia River Valley in the Tampa Bay Area combine to supply approximately twenty percent of the world's supply of phosphate rock.

Another important industry is the processing and canning of citrus fruits and juices. Other industries include tanning and wood products processing.

Probably the third most important source of revenue in the basin is the tourist trade. This is concentrated for the most part in the lake region in the northern part of the basin.

USE OF WATER RESOURCES

There are thirteen public water supplies in the basin, two of them from surface sources serving 9,000 people.

The upper portion of the basin is attractive to tourists because of the numerous lakes and the recreational opportunities they provide. Charlotte Harbor is one of the finest salt water fishing grounds in the State. Boating is a popular sport there.

The chief use of the waters of the Peace River has been used to carry away waste; particularly from the phosphate mining operations. Steps to correct this practice are now in progress.

POLLUTION AND POLLUTION CONTROL

Available data regarding sources and amounts of domestic and industrial pollution, existing treatment facilities, and treatment plant requirements are shown in Tables A through I, inclusive.

Nine municipalities with a total sewered population of 39,000 discharge pollution to watercourses of the basin.

Twenty-one industries also discharge pollution directly to streams. Eleven of these produce organic waste having a population equivalent of 220,000. Five produce organic wastes in undetermined quantities, and six* produce inorganic waste. Existing treatment facilities at all of these industrial plants is undetermined.

Five municipalities have primary treatment plants serving 12,100 people. Three municipalities have secondary treatment plants serving 23,050 people. One municipality, having a sewered population of 3,850, provides no treatment.

The design capacity and operation of three of the municipal treatment plants is satisfactory, four are unsatisfactory, and one is undetermined.

There was one municipal sewage treatment plant to serve 20,000 people and no industrial waste treatment plants constructed during the period 1946 through 1949. Requirements for industrial waste treatment plants are undetermined. Construction of four new municipal plants to serve 12,750 people and addition to one plant serving 2,700 persons is required. No project is required at three plants serving 23,350 people. Requirements at one plant serving 200 people are undetermined.

One new municipal waste treatment plant is under construction, plans are under preparation for one other, and no formal action has been taken with four municipalities.

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* One included also under organic waste.

TABLE A(28)

SOURCES OF POLLUTION

MUNICIPAL

Municipalities*	Sources of Pollution (In Number of Municipalities)	Population Served by Sewerage System	Amount of Pollution Discharged to Water course (In Terms of Equivalent number of People)
Having data on pollution load discharged to watercourse	0	-	-
Having population data available (Data on pollution load to watercourse incomplete or not available)	9	39,000	Not applicable
TOTAL	9	39,000	XXX XXX

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE B(28)

SOURCES OF POLLUTION

INDUSTRIAL

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharged to Watercourse (In terms of Equiv. No. of People)
Producing Organic Wastes	11	220,000
Producing Organic Wastes	5	Undetermined
Producing Inorganic Wastes	*6	Not Applicable
Producing Wastes of Undetermined Type	0	Undetermined
TOTAL	**21	xxx xxx

* One included also under organic wastes

** Total adjusted to correct for duplication noted in footnote marked, *.

TABLE C(28)

EXISTING TREATMENT FACILITIES

MUNICIPAL

Degree of Treatment Provided	Number Municipalities*	Plants	Population Served
Primary	5	5	12,100
Secondary	3	3	23,050
No Treatment	1	XXXX	3,850

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE $D_{(28)}$

EXISTING TREATMENT FACILITIES

INDUSTRIAL *

Number of Industrial Plants Having:

Type Industry	Number of Plants	Treatment Facilities	No Treatment Facilities	Undetermined Facilities
Food and Kindred Products	15	0	0	15
Leather and Leather Products	1	0	0	1
Mining(phosphate)	5	0	0	5

* Industries having separate outlets and discharging wastes directly to watercourse.

TABLE $E_{(28)}$

ADEQUACY OF EXISTING TREATMENT FACILITIES

Existing Treatment Facilities	Number	Adequacy with Relation to: Capacity			Operation		
		Satisf.	Unsatisf.	Undetermined	Satisf.	Unsatisf.	Undetermined
Municipal	8	3	4	1	3	4	1
Industrial	0	-	-	-	-	-	-

TABLE F (28)

PROGRESS IN POLLUTION ABATEMENT

	Municipal		Industrial	
Year	Plants Completed	Design Population	Plants Completed	Amount of Wastes Treated (In Terms of Equiv. No. People)
1946	0	-	0	-
1947	0	-	0	-
1948	1	20,000	0	-
1949	0	-	0	-

TABLE G(28)

REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL WASTE TREATMENT PLANTS

Requirements	Municipal		Industrial
	Number	Population Served by Facilities	Number
New Plant	4	12,750	0
Enlargement or Additions to Existing Plant	1	2,700	0
Replace Existing Plant	0	-	0
No Project Required	3	23,350	0
Undetermined	1	200	21

TABLE I (28)

PROJECT LIST - MUNICIPALITIES AND INDUSTRIES REQUIRING IMPROVEMENTS FOR ABATEMENT OF POLLUTION

July 1,1950

Name	Population Served	Project Requirements	Remarks
Arcadia	3,850	New Plant	
Bartow	5,400	New Plant	Under construction
Fort Meade	2,000	New Plant	
Punta Gorda	1,500	New Plant	Plans under Preparation
Wauchula	2,700	Additions to Existing Plant	
Zolfo Springs	200	Undetermined	
Food and Kindred Products	220,000	Eleven Undetermined	
Food and Kindred Products	Not known	Four Undetermined	
Leather and Leather Products	Not known	One Undetermined	
Mining (phosphate)	Not known	Five Undetermined	

SUB-BASIN 29

KISSIMMEE RIVER BASIN

GENERAL DESCRIPTION

The Kissimmee River Basin is bounded on the north and east by the St. Johns River Basin, on the east by the Florida East Coastal Area, on the south by the Lower Florida Area, and on the west by the Peace and Withlacoochee River Basins.

The Kissimmee River arises in central Florida and flows through a chain of lakes in a southerly direction to Lake Okeechobee. The basin drains an area of about 3729 square miles. At the western edge of the basin a series of interconnecting lakes, which formerly drained into the Kissimmee River, now drain into Lake Okeechobee through the Indian Prairie Canal.

The western edge of the basin is characterized by rolling hills and is interspersed with small clear lakes. The eastern part is a flat grassy plain.

The average annual rainfall varies with location from forty-five to fifty inches, but occurs mostly during the summer months. Maximum rainfall per twenty-four hours may be extremely high, such as nine inches, which results in many instances in flooding the surrounding country. A seventeen year record of the U.S. Geological Survey gauge near Okeechobee, Florida, where the drainage area is 3,260 square miles, shows the average discharge to be 1,806 cubic feet per second. The maximum discharge at this point was 15,600 cubic feet per second, and the minimum was 231 cubic feet per second.

The climate of the basin may be considered to be subtropical. The mean annual temperature is about seventy-two degrees. The number of days annually without killing frosts varies from 310 to 365.

The total population of the basin based upon the 1940 census was 46,883. Twenty-one percent of this population was urban. The preliminary 1950 census indicates a population of 72,654 with forty percent urban.

ECONOMIC DEVELOPMENT

The basin contains six urban communities one of which has reached that status since 1940.

Agriculture is the chief occupation of the basin with citrus fruit and beef cattle being the principal products. Kissimmee is probably the largest cattle market in the State.

The major industry is concerned with the processing of citrus products. The area also enjoys a profitable tourist trade during the winter months.

USE OF WATER RESOURCES

There are nineteen public water supplies in the basin serving 35,835, five of which are from surface sources and serve 2,580 persons.

The numerous lakes and the large amount of wild land in the basin provides harborage for fish and wildlife, and provides excellent hunting and fishing. Portions of some of the lakes, however, are seriously polluted.

Surface water resources of the basin are used for irrigation. A limited amount of commercial fishing is done on Lake Okeechobee.

POLLUTION AND POLLUTION CONTROL

Available data regarding sources and amounts of domestic and industrial pollution, existing treatment facilities, and treatment plant requirements are shown in Tables A through I, inclusive.

Eight municipalities with a sewered population of 13,050 and five industries producing organic waste discharge pollution to watercourses of the basin. Three of these industries discharge waste having a population equivalent of 51,000.

Of the eight municipalities, three have primary treatment plants serving 6,800 people, four have secondary treatment plants serving 5,450 persons, and one having a sewered population of 800 provides no treatment. Facilities at the five industries are undetermined.

The design capacity of one municipal treatment plant is satisfactory, and that of six is unsatisfactory. Operation at two is satisfactory and unsatisfactory at five.

No municipal or industrial waste treatment plants have been constructed during the period 1946-1949. Requirements for industrial plants are undetermined. One new municipal plant to serve 800 people is needed. Enlargement is required at four others to serve 6,200 persons. Two to serve 5,300 people require replacement. No project is needed at one serving a population of 750.

Plans are under preparation at two municipalities for construction of treatment plants. Final plans have been approved for one project. No formal action has been taken with one municipality to abate pollution. The status of three municipalities and five industries is undetermined.

TABLE A (29)

SOURCES OF POLLUTION

MUNICIPAL

Municipalities*	Sources of Pollution (In Number of Municipalities)	Population Served by Sewerage System	Amount of Pollution Discharged to Watercourse (In Terms of Equivalent number of People)
Having data on pollution load discharged to watercourse	0	-	-
Having population data available (Data on pollution load to watercourse incomplete or not available)	8	13,050	Not Applicable
TOTAL	8	13,050	XXX XXX

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE B (29)

SOURCES OF POLLUTION

INDUSTRIAL

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharged to Watercourse (In Terms of Equiv. No. of People)
Producing Organic Wastes	3	51,000
Producing Organic Wastes	2	Undetermined
Producing Inorganic Wastes	0	Not Applicable
Producing Wastes of Undetermined Type	0	Undetermined
TOTAL	5	xxx xxx

TABLE C(29)

EXISTING TREATMENT FACILITIES

MUNICIPAL

Degree of Treatment Provided	Number Municipalities*	Plants	Population Served
Primary	3	3	6,800
Secondary	4	4	5,450
No Treatment	1	XXXX	800

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE D(29)

EXISTING TREATMENT FACILITIES

INDUSTRIAL *

Type Industry	Number of Plants	Number of Industrial Plants Having:		
		Treatment Facilities	No Treatment Facilities	Undetermined Facilities
Food and Kindred Products	5	0	0	5

* Industries having separate outlets and discharging wastes directly to watercourse.

TABLE E(29)

ADEQUACY OF EXISTING TREATMENT FACILITIES

Existing Treatment Facilities	Number	Adequacy with Relation to:					
		Capacity			Operation		
		Satisf.	Unsatisf.	Undetermined	Satisf.	Unsatisf.	Undetermined
Municipal	7	1	6	0	2	5	0
Industrial	0	-	-	-	-	-	-

TABLE $F_{(29)}$

PROGRESS IN POLLUTION ABATEMENT

	Municipal		Industrial	
Year	Plants Completed	Design Population	Plants Completed	Amount of Wastes Treated (In Terms of Equiv. No. People)
1946	0	-	0	-
1947	0	-	0	-
1948	0	-	0	-
1949	0	-	0	-

TABLE G (29)

REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL WASTE TREATMENT PLANTS

Requirements	Municipal		Industrial
	Number	Population Served by Facilities	Number
New Plant	1	800	0
Enlargement or Additions to Existing Plant	4	6,200	0
Replace Existing Plant	2	5,300	0
No Project Required	1	750	0
Undetermined	0	-	5

TABLE $H_{(29)}$

STATUS OF TREATMENT WORKS PROJECT TO ABATE POLLUTION

July 1,1950

Status of Project	Number Municipal	Industrial
No Formal Action	1	0
Abatement Ordered	0	0
Plans under Preparation	2	0
Final Plans Approved	1	0
Construction Awaiting Financing	0	0
Under Construction	0	0
Status Undetermined	3	5

TABLE I (29)

PROJECT LIST - MUNICIPALITIES AND INDUSTRIES REQUIRING IMPROVEMENTS FOR ABATEMENT OF POLLUTION

July 1,1950

Name	Population Served	Project Requirements	Remarks
Avon Park	1,500	Enlargement of Existing Plant	
Haines City	1,200	Enlargement of Existing Plant	
Kissimmee	3,500	Replacement of Existing Plant	Plans under Preparation
Lake Wales	1,500	Enlargement of Existing Plant	Final plans approved
Okeechobee	800	New Plant	
St. Cloud	1,800	Replacement of Existing Plant	Plans under Preparation
Sebring	2,000	Enlargement of Existing Plant	
Food and Kindred Products	51,000	Three Undetermined	By-Product recovery used (two plants)
Food and Kindred Products	Not Known	Two Undetermined	

SUB-BASIN 30

FLORIDA EAST COASTAL AREA

GENERAL DESCRIPTION

The Florida East Coastal sub-basin extends along the east coast of Florida from north of St. Augustine south to Stuart. The area is entirely within the State of Florida and contains approximately 2848 square miles, a long narrow strip along the coast. It is bounded by the St. Johns and Kissimmee basins on the north and west, the Lower Florida to the south, and the Atlantic Ocean on the east.

The linking of tidal estuaries by the inland waterway canal has formed the chief waterways of this part of Florida. Although the direction of flow is affected by tidal action, flow of these streams is continuous.

Principle streams and their outlets are as follows: the North River which empties into St. Augustine Inlet; Matanzas River which diverts a portion of its flow to both St. Augustine and Matanzas Inlets; the Halifax River, emptying just south of Port Orange; and Indian River from slightly north of Titusville to Stuart. There are a number of small tributaries extending from the inland canal to the ocean, and numerous small fresh water atteams extend back from the estuaries both on the mainland and island sides of the waterway.

The topography of the area is flat, the maximum elevation being only a few feet above sea level, and slopes generally from the western boundary toward the ocean. Bays, tidal estuaries, and offshore islands make up the Atlantic shoreline.

An even, temperate climate is enjoyed in this region, the average temperature varying from about seventy-four degrees in the southern extremity to seventy degrees in the northern. Practically the entire year is frost free, enabling the growing seasons to be lengthened considerably. Yearly rainfall is between forty-eight and fifty inches, maximum precipitation occurring during the warm season months of June through September.

Summer rainfall usually occurs in the form of heavy thundershowers of one or two hours duration which occur on an average of every other day.

Occasionally very heavy rains, usually accompanied by tropical disturbances, are experienced, while periods of little or no rainfall are rare instances. Tropical storms and hurricanes are the most destructive climatic elements; however, several years may pass without undergoing such disturbances. Relative humidity is high. However, fog is usually experienced only during the early mornings during a few days of the colder season.

ECONOMIC DEVELOPMENT

The 1940 census indicates the population of the basin area to be approximately 85,252 of which 34 percent was rural. The preliminary 1950 census shows a population increase to about 119,793, of which approximately 36 percent is rural. This data relates to permanent inhabitants only, however, the maximum population during the height of the winter tourist season having been estimated to exceed this total by 20 to 25 percent. There are ten incorporated municipalities with populations over 2500, totaling 83,439 persons in the basin. Of these, three, Daytona Beach, St. Augustine, and Ft. Pierce have populations in excess of 10,000.

The chief industries of the area are catering to the tourist trade and production of citrus fruits and allied industries--ranking first and second in that order. In the northern section, truck farming is the principle form of agriculture. The central and southern sections growing mostly citrus fruits. This part of Florida is a part of the noted "Florida Gold Coast" which attracts hordes of tourists and winter residents. An estimated $625,000,000 take from the tourist trade was realized during 1946 by the entire State, a fair share being collected in this area.

Transportation throughout the area is provided by rail, highways, and waterways. The Florida East Coast

Railroad parallels the coast line, as do U.S. Highway No. 1 and No. 1 (A-1-A). Transverse highways enter the area at practically every population center. The inland waterway provides the main artery of water borne traffic.

Industry is limited in size and pursuit in this part of Florida. A citrus canning and processing plant for citrus by-products is located at Fort Pierce; Daytona Beach and New Smyrna Beach have boat works for the production of pleasure craft; and St. Augustine is the center of a flourishing shrimp and fishing industry.

USE OF WATER RESOURCES

There are a total of seventeen municipal water supplies in this basin, of which sixteen are from ground water, and one from a lake. Approximately 94 percent of the total domestic consumption is served by the ground water supplies. No exact datum is available regarding industrial consumption, but it is doubtlessly a relatively small percentage of the total.

Due to the highly colored nature of the inland waterways, recreational uses of these streams are chiefly restricted to boating and fishing. Some portions of the Indian River that are fartherest from the inlets contain oxygen consuming organic matter to such a degree that fish life cannot live. The inland waterway, and tidal estuaries and inlets are considered excellent sport fishing grounds, principally for salt water game fish.

In the past, sizable oyster beds in the vicinity of Port Orange, Sebastian, Vero Beach, and Ft. Pierce have supported a prosperous oystering business. However, the latter three and most of the growing beds at Port Orange have been subsequently condemned because of the discharge of sewage into these waters. Stream surveys have been conducted or are still being carried out on several of the discharging streams to determine the extent and nature of the pollution. Preliminary reports have indicated that condemnation is due to bacterial content of the waters, the oxygen content of the streams not being markedly reduced. This would indicate that the pollution could be abated without undue difficulty, presumably by the treatment of domestic sewage of contributing municipalities.

Since the maximum elevation of the area is approximately 30 feet above sea level, there is no opportunity for hydroelectric developments on any of the streams of the basin.

Flood control in the area is accomplished by the use of canals and ditches which intercept surface runoff and carry it to the tidal waters. Then waterways are also valuable to agriculture of the region by providing drainage during wet periods, and irrigation waters during dry seasons. Mosquito breeding has been materially reduced by drainage as has the breeding of the sand fly. Both of these insects prevented full utilization of the area in past years. Spray programs have been carried out in the basin to eliminate malarial mosquitoes and pest insects.

The inland waterway is the main passage for small craft which move seasonally between the northern and southern waters.

POLLUTION AND POLLUTION CONTROL

Available data regarding sources and amounts of domestic and industrial pollution, existing treatment facilities and treatment plant requirements are shown in Tables A through I.

Population served by sewerage data are available from twelve of the thirteen municipalities which are known to discharge wastes into natural waters of the area. No data have been submitted regarding the pollutional load being discharged. The effects of pollution have been mentioned previously regarding the condemnation of extensive oyster beds at Daytona Beach, Sebastian, Vero Beach, and Ft. Pierce.

Of the thirteen municipalities, ten having a total population of 33,410 have primary treatment only, and three having a total of 22,000 persons have no treatment at all. Neither of the industrial plants have treatment facilities. One of the treatment plants was determined to be satisfactory regarding design capacity, seven were unsatisfactory, and two were undetermined. Three were satisfactorily operated, five unsatisfactorily, and two undetermined. During the period from 1946-1949 one municipal treatment plant having a design capacity of 66,500 was completed. No industrial plants were constructed during the same period.

It is considered that nine of the municipalities require new treatment plant facilities to effectively reduce pollution of the basin waters, two require no further facilities, and two are undetermined. Of the six municipalities requiring new plants, two have plans under preparation, two have the final plans approved, and two have begun construction.

TABLE A(30)

SOURCES OF POLLUTION

MUNICIPAL

Municipalities*	Sources of Pollution (In Number of Municipalities)	Population Served by Sewerage System	Amount of Pollution Discharged to Watercourse (In Terms of Equivalent number of People)
Having data on pollution load discharged to watercourse	0	-	-
Having population data available (Data on pollution load to watercourse incomplete or not available)	12	55,410	Not Applicable
TOTAL	**13	55,410	XXX XXX

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

** Includes one source for which no population served or pollution discharged figures are available.

TABLE B(30)

SOURCES OF POLLUTION

INDUSTRIAL

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharged to Watercourse (In Terms of Equiv. No. of People)
Producing Organic Wastes	0	-
Producing Organic Wastes	1	Undetermined
Producing Inorganic Wastes	0	Not Applicable
Producing Wastes of Undetermined Type	1	Undetermined
TOTAL	2	xxx xxx

TABLE C

(30)

EXISTING TREATMENT FACILITIES

MUNICIPAL

Degree of Treatment Provided	Number Municipalities*	Plants	Population Served
Primary	10	10	33,410
Secondary	0	-	-
No Treatment	3	XXXX	22,000

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE D (30)

EXISTING TREATMENT FACILITIES

INDUSTRIAL *

		Number of Industrial Plants Having:		
Type Industry	Number of Plants	Treatment Facilities	No Treatment Facilities	Undetermined Facilities
Chemical and Allied Products	1	0	0	1
Undetermined	1	0	0	1

* Industries having separate outlets and discharging wastes directly to watercourse.

TABLE E(30)

ADEQUACY OF EXISTING TREATMENT FACILITIES

Existing Treatment Facilities	Number	Adequacy with Relation to:					
		Capacity			Operation		
		Satisf.	Unsatisf.	Undetermined	Satisf.	Unsatisf.	Undetermined
Municipal	10	1	7	2	3	5	2
Industrial	0	-	-	-	-	-	-

TABLE $F_{(30)}$

PROGRESS IN POLLUTION ABATEMENT

	Municipal		Industrial	
Year	Plants Completed	Design Population	Plants Completed	Amount of Wastes Treated (In Terms of Equiv.No.People)
1946	0	-	0	-
1947	0	-	0	-
1948	0	-	0	-
1949	1	66,500	0	-

TABLE G(30)

REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL WASTE TREATMENT PLANTS

Requirements	Municipal		Industrial
	Number	Population Served by Facilities	Number
New Plant	*9	32,260	0
Enlargement or Additions to Existing Plant	0	-	0
Replace Existing Plant	0	-	0
No Project Required	2	2,150	0
Undetermined	2	21,000	2

* Includes one for which no population served figure is available.

TABLE H (30)

STATUS OF TREATMENT WORKS PROJECT TO ABATE POLLUTION

July 1, 1950

Status of Project	Number	
	Municipal	Industrial
No Formal Action	1	0
Abatement Ordered	0	0
Plans under Preparation	2	0
Final Plans Approved	2	0
Construction Awaiting Financing	0	0
Under Construction	2	0
Status Undetermined	6	2

TABLE I(30)

PROJECT LIST - MUNICIPALITIES AND INDUSTRIES REQUIRING IMPROVEMENTS FOR ABATEMENT OF POLLUTION

July 1,1950

Name	Population Served	Project Requirements	Remarks
Cocoa, Fla.	3,000	New Plant	
Eau Gallie, Fla.	800	New Plant	
Fort Pierce, Fla.	7,000	New Plant	
Melbourne, Fla.	2,000	New Plant	Plans under Preparation
New Smyrna Beach,Fla.	4,000	New Plant	Plans under Preparation
Rockledge, Fla.	Not known	New Plant	Under Construction
St. Augustine,Fla.	12,100	New Plant	Final Plans Approved
Stuart, Fla.	1,000	New Plant	Final Plans Approved
Titusville, Fla.	2,360	New Plant	
Chemical and Allied Products	Not known	One Undetermined	
Undetermined Type	Not known	One Undetermined	

SUB-BASIN 31

LOWER FLORIDA AREA

GENERAL DESCRIPTION

The Lower Florida Area, approximately eleven thousand square miles, lies south of a line from just north of Stuart on the east coast, through Lake Okeechobee, to north of Fort Myers on the west coast. To the north the area is bounded by the Peace and Kissimmee River Basins and the Florida East Coastal Area. The other boundaries are coastal, viz the Atlantic Ocean on the east and Gulf of Mexico on the west.

Natural drainage of the area is poor but has been improved greatly by many drainage canals. Lake Okeechobee which receives water from the Kissimmee Basin and connected areas, lies about 30 miles from the Atlantic Coast and 60 miles from the Gulf of Mexico and has an average elevation of about 13 feet above mean sea level. This shallow, 730 square mile lake originally had no normal outlet but spilled over its southern rim and spread over the vast Everglades or slowly spilled over the flat area to the west and entered the Caloosahatchee River. Now drainage is accomplished by levying the southern shore and discharging the lake through artificial outlets, viz St. Lucie Canal to the east and a connection to Caloosahatchee River to the west, thereby affording a navigable waterway from coast to coast. The Everglades, covering over one-third of the area, originally was a vast sawgrass and water area, but now is partially drained by canals. It lies in a trough of sedimentary limerock and is bordered on the east by a narrow coastal ridge which attains elevations up to 13 feet above sea level and on the west by sandy ground rising to an elevation of 25 feet above sea level and embracing the areas known as the Devil's Garden and Big Cypress Swamp. The east coast is formed by a sandy strip from 5 to 10 miles wide which broadens at its southern end where the Everglades bend westward. There is a chain of islands or keys off shore which extends all the way out into the Atlantic Ocean to Key West almost 100 miles off shore. From the area's northern border to Biscayne Bay these islands are separated from the mainland by lagoons into which short streams and drainage canals discharge. The southern and western coasts are bordered by mangrove swamps and thousands of islands.

In this part of Florida the four normal seasons of the temperate zone give way to the wet and dry seasons characteristic of the tropics. Mean annual temperatures average about 73 degrees F. and range from average January temperatures of 64 degrees to 70 degrees up to average July temperatures of from 80 degrees to 84 degrees. The relative humidity is generally very high throughout the area. Normal winds are generally from the southeast. The area lies in the path of tropical hurricanes which bring whirling, counter-clockwise winds reaching velocities in excess of 150 miles per hour. Hurricane season usually includes the months of August, September and October. Average annual rainfall varies from approximately 64 inches in the Everglades to a little over 50 inches at the northern border of the area. About 70 percent of the rainfall occurs from May through October, the wet season. The July and August temperatures are moderated considerably by the almost daily showers.

Run-off is very low because of the flat topography and absorptive characteristics of the soils. When continued rains saturate the soil and fill up the natural lakes and sloughs, water overflows the inadequate drainages channels, spreads over the low lands and moves slowly in the direction of prevailing slopeexcept when there is none then in the direction of the wind. Artificial drainage outlets, pumping and dikes are used to accelerate this run-off.

The areas' 1940 population was 435,307 and according to 1950 preliminary figures the population has increased to 754,736.

ECONOMIC DEVELOPMENT

Both the 1940 census and 1950 preliminary figures indicate that urban population amounts to approximately three-fourths of the total. The number of urban centers increased from 17 in 1940, to 28 in 1950. The east coast in this area is an almost continuous line of small cities many of which in themselves do not qualify as urban, but being so closely located create developed area of urban population density. It is along this coast that by far the major portion of the population of the area is found. There are a few communities built up along the shores of Lake Okeechobee and one city on the west coast in the northwest corner of the area.

The population figures given for the area do not include winter residents which almost double the number of permanent residents. Migratory workers greatly increase the population of the Lake Okeechobee area during the period of heaviest crop harvest which is also in the winter. Except for Ft. Myers, the west coast and most of the interior of the area are very sparsely populated. A few fishing villages are found along the coast. Inland there are some Indian villages and hunting lodges. Agricultural pursuits, food processing, commercial fishing and catering to the tourist trade provide the principal employment of the area.

Resources of the area are numerous. The muck soil is rich and very productive. Fisheries are of great value. Oil is produced in commercial quantities at one well in the Big Cypress Swamp, and drilling is in active progress in other parts of the area. Vast pasture lands are open range. Perhaps the most outstanding resource of the area is the water and climate which attracts visitors year around from all parts of the country. Wildlife is found in great variety throughout the area but because of the expanse of area hunting is not concentrated to any great extent in any particular area.

Industry of the area along the east coast and the southern shore of Lake Okeechobee, includes the processing of agricultural products and sea food.

USE OF WATER RESOURCES

Water for domestic purposes is furnished 539,745 persons of the area by 65 public supplies. There are 9 surface sources serving 43,197 people and 57 ground sources serving 496,548 people. One public supply uses both a ground and surface source. There is sufficient water throughout the area for stock. Surface water level in some areas is controlled for both irrigation and drainage.

The major use of water other than for domestic purposes is for recreation. Water throughout the area supports one or more of the following activities: bathing, boating, wildlife, sport fishing. Commercial fishing is an important pursuit. Lake Okeechobee is declared salt water for the purpose of allowing commercial fishing. It is unlawful to sell fish caught in fresh water in the State. Commercial shell fishing and other water uses are being affected by increasing pollution near urban areas.

The Corp of Engineers is carrying on extensive flood control and harbor projects throughout the area. Maintenance of water levels in the drainage canals is expected to prevent further encroachment of the salt water. The major harbors are Port Everglades at Ft. Lauderdale and Miami.

POLLUTION AND POLLUTION CONTROL

Available data regarding sources and amounts of domestic and industrial pollution, existing treatment facilities and treatment plant requirements are shown in Tables A through I.

There are 22 communities, serving 258,940 people, discharging sewage to the waters of the area. Sewage is treated in eleven primary plants serving 74,450 people in ten communities and in three secondary plants serving 30,370 people in three other communities. Sewage from nine communities, 154,120 people, receives no treatment. Of the fourteen sewage treatment plants ten have unsatisfactory design capacity and nine are unsatisfactorily operated. There are three industrial establishments (two food processing and one gas plant) discharging liquid wastes the treatment of which is unreported. Since 1945 there have been two sewage treatment plants constructed, viz one in 1948 for a design population of 3,000 and one in 1949 for a design population of 25,000.

Requirements for sewage treatment facilities are reported as: fourteen new plants to serve 207,570 people, enlargements or additions to two plants serving 3,000 people and replacement of one plant serving 2,000 people. No projects are required for five facilities serving 46,370.

Industrial waste treatment requirements have not been determined. Progress in pollution abatement is indicated by preparation of plans for six facilities and construction of three projects awaiting financing. For one project needed there has been no formal action for abatement, and for seven the status of abatement is undetermined.

From an economic standpoint, the protection of tidal waters along the entire east coast and the gulf coast in the vicinity of Ft. Myers is by far the most pressing pollution control problem. These areas are the leading tourist centers of the State and continuance of the tourist trade depends to a great extent on recreational use of waters.

TABLE A(31)

SOURCES OF POLLUTION

MUNICIPAL

Municipalities*	Sources of Pollution (In Number of Municipalities)	Population Served by Sewerage System	Amount of Polluti Discharged to Wa course (In Terms Equivalent number People)
Having data on pollution load discharged to watercourse	0	-	-
Having population data available (Data on pollution load to watercourse incomplete or not available)	22	258,940	Not applicable
TOTAL	22	258,940	XXX XXX

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE B(31)

SOURCES OF POLLUTION

INDUSTRIAL

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharge to Watercourse (In Terms of Equiv. No. of People)
Producing Organic Wastes	0	-
Producing Organic Wastes	2	Undetermined
Producing Inorganic Wastes	* 1	Not Applicable
Producing Wastes of Undetermined Type	1	Undetermined
TOTAL	**3	xxx xxx

* Also producing organic wastes.

** Total adjusted to correct for duplication noted in footnote marked thus, *.

TABLE C(31)

EXISTING TREATMENT FACILITIES

MUNICIPAL

Degree of Treatment Provided	Number Municipalities*	Plants	Population Served
Primary	10	11	74,450
Secondary	3	3	30,370
No Treatment	9	XXXX	154,120

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers; sanitary sewage wastes discharged by industry directly to watercourse and industrial wastes discharged into municipal sewage systems.

TABLE D(31)

EXISTING TREATMENT FACILITIES

INDUSTRIAL *

Type Industry	Number of Plants	Number of Industrial Plants Having: Treatment Facilities	No Treatment Facilities	Undetermined Facilities
Food and Kindred Products	2	0	0	2
Products of Petroleum and Coal	1	0	0	1

* Industries having separate outlets and discharging wastes directly to watercourse.

TABLE E (31)

ADEQUACY OF EXISTING TREATMENT FACILITIES

Existing Treatment Facilities	Number	Adequacy with Relation to:					
		Capacity			Operation		
		Satisf.	Unsatisf.	Undetermined	Satisf.	Unsatisf.	Undetermined
Municipal	14	4	10	0	5	9	0
Industrial	0	-	-	-	-	-	-

TABLE F $_{(31)}$

PROGRESS IN POLLUTION ABATEMENT

	Municipal		Industrial	
Year	Plants Completed	Design Population	Plants Completed	Amount of Wastes Treated (In Terms of Equiv. No. People)
1946	0	-	0	-
1947	0	-	0	-
1948	1	3,000	0	-
1949	1	25,000	0	-

TABLE G (31)

REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL WASTE TREATMENT PLANTS

Requirements	Municipal		Industrial
	Number	Population Served by Facilities	Number
New Plant	14	207,570	0
Enlargement or Additions to Existing Plant	2	3,000	0
Replace Existing Plant	1	2,000	0
No Project Required	5	46,370	0
Undetermined	0	-	3

TABLE H(31)

STATUS OF TREATMENT WORKS PROJECT TO ABATE POLLUTION

July 1, 1950

Status of Project	Number	
	Municipal	Industrial
No Formal Action	1	0
Abatement Ordered	0	0
Plans under Preparation	6	0
Final Plans Approved	0	0
Construction Awaiting Financing	3	0
Under Construction	0	0
Status Undetermined	7	3

TABLE I(31)

PROJECT LIST - MUNICIPALITIES AND INDUSTRIES REQUIRING IMPROVEMENTS FOR ABATEMENT OF POLLUTION

July 1, 1950

Name	Population Served	Project Requirements	Remarks
Boynton Beach, Fla.	800	New Plant	
Dania, Fla.	3,000	New Plant	Plans under Preparation
Delray Beach, Fla.	2,000	Additions to Existing Plant	
Everglades, Fla.	300	New Plant	
Fort Meyers, Fla.	11,000	New Plant	Plans under Preparation
Hallandale, Fla.	1,520	New Plant	
Hollywood, Fla.	1,800	New Plant	Plans under Preparation
Homestead, Fla.	1,000	Additions to Existing Plant	Plans under Preparation
La Belle, Fla.	400	New Plant	
Lake Worth, Fla.	11,000	New Plant	Construction Awaits Financing
Lantana, Fla.	250	New Plant	
Miami, Fla.	100,000	New Plant	Plans under Preparation
Miami Beach, Fla.	32,000	New Plant	Plans under Preparation
Palm Beach, Fla.	3,000	New Plant	Construction Awaits Financing
Pompano, Fla.	2,000	Replace Existing Plant	
Riviera Beach, Fla.	1,500	New Plant	
West Palm Beach, Fla.	41,000	New Plant	Construction Awaiting Financing
Food and Kindred Products	Not known	Two undetermined	
Product of Petroleum and Coal	Not known	One undetermined	